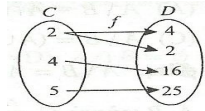


**1. f z qfS k; rhhGfS k;
xU kj igngz ; tpdhffs;**

1. A kwWk; B vdg d , uz l f z qfS; vdf. $A \cup B = A \cup B$ wF Nj i tahd kwWk; NghJ kh d fl lgg hL
(A) $B \subseteq A$ (B) $A \subseteq B$ (C) $A \neq B$ (D) $A \cap B = \Phi$
2. $A \subset B$ v d p y > $A \cap B =$
(A) B (B) $A \setminus B$ (C) A (D) $B \setminus A$
3. P kwWk; Q vdg d V Nj Dk; , uz l f z qfS; v d p y > $P \cap Q =$
(A) $\{x: x \in P \text{ myyJ } x \in Q\}$ (B) $\{x: x \in P \text{ kwWk; } x \notin Q\}$
(C) $\{x: x \in P \text{ kwWk; } x \in Q\}$ (D) $\{x: x \notin P \text{ kwWk; } x \in Q\}$
4. $A = \{p, q, r, s\}$, $B = \{r, s, t, u\}$ v d p y; $A \cap B =$
(A) $\{p, q\}$ (B) $\{t, u\}$ (C) $\{r, s\}$ (D) $\{p, q, r, s\}$
5. $n[p(A)] = 64$ v d p y > $n(A) =$
(A) 6 (B) 8 (C) 4 (D) 5
6. A , B kwWk; C Mf p a V Nj Dk; % d W f z qfS f F > $A \cap (B \cup C) =$
(A) $(A \cup B) \cup (B \cap C)$ (B) $(A \cap B) \cup (A \cap C)$ (C) $A \cup (B \cap C)$ (D) $(A \cup B) \cap (B \cup C)$
7. A , B Mf p a , uz l f z qfS f F > $\{(A \setminus B) \cup (B \setminus A)\} \cap (A \cap B) =$
(A) Φ (B) AUB (C) $A \cap B$ (D) $A' \cap B'$
8. f No nfhLf fgg l i t f s p y; j t wh d \$ w W v J ?
(A) $A \setminus B = A \cap B'$ (B) $A \setminus B = A \cap B$ (C) $A \setminus B = (C) (A \cup B) \cap B'$ (D) $A \setminus B = (A \cup B) \setminus B$
9. A , B kwWk; C Mf p a V Nj Dk; % d W f z qfS f F > $B \setminus (A \cup C) =$
(A) $(A \setminus B) \cap (A \setminus C)$ (B) $(B \setminus A) \cap (B \setminus C)$ (C) $(B \setminus A) \cap (A \setminus C)$ (D) $(A \setminus B) \cap (B \setminus C)$
10. $n(A) = 20$, $n(B) = 30$ kwWk; $n(A \cup B) = 40$ v d p y > $n(A \cap B) =$
(A) 50 (B) 10 (C) 40 (D) 70
11. $\{(x, 2), (4, y)\}$ xU rkd p r; r h h i g f; F w p f f p w J v d p y > $(x, y) =$
(A) (2, 4) (B) (4, 2) (C) (2, 2) (D) (4, 4)
12. $\{(7, 11), (5, a)\}$ xU khw p y r; r h h i g f; F w p f f p w J v d p y > 'a' - d; k j i g g
(A) 7 (B) 11 (C) 5 (D) 9
13. $f(x) = (-1)^x$ v d g J N - y p U e J Z - f F t i u a W f f g g l L s s J . f - d; t i r r f k;
(A) {1} (B) N (C) {1, -1} (D) Z
14. $f = \{(6, 3), (8, 9), (5, 3), (-1, 6)\}$ v d p y; 3 - d; K d; c U f f s;
(A) 5 kwWk; -1 (B) 6 kwWk; 8 (C) 8 kwWk; -1 (D) 6 kwWk; 5
15. $A = \{1, 3, 4, 7, 11\}$ kwWk; $B = \{-1, 1, 2, 5, 7, 9\}$ v d f. $f = \{(1, -1), (3, 2), (4, 1), (7, 5), (11, 9)\}$ v d w t h W m i k e j r h h G
f: $A \rightarrow B$ v d g J
(A) x d W f F x d w h d r h h G (B) N k y; r h h G (C) , U G w r; r h h G (D) r h h G m y y



16. nfhLf fgg l L s s g l k; F w p f F k; r h h G > x U
(A) N k y; r h h G (B)) khw p y r; r h h G (C) x d W f F x d w h d r h h G (D) r h h G m y y
17. $A = \{5, 6, 7\}$ kwWk; $B = \{1, 2, 3, 4, 5\}$ v d f. $f(x) = x - 2$ v d w t h W t i u a i w n r a a g g l l r h h G f: $A \rightarrow B$, d;
t i r r f k > ----- (A) {1, 4, 5} (B) {1, 2, 3, 4, 5} (C) {2, 3, 4} (D) {3, 4, 5}
18. $f(x) = x^2 + 5$ v d p y > $f(-4) =$
(A) 26 (B) 21 (C) 20 (D) -20
19. xU r h h g d; t i r r f k; X U W g G f; f z k h d h y > m J x U
(A) khw p y r; r h h G (B) r k d p r; r h h G (C) , U G w r; r h h G (D) x d W f F x d w h d r h h G
20. f: $A \rightarrow B$ x U , U G w r; r h h G kwWk; $n(A) = 5$ v d p y; $n(B) =$
(A) 10 (B) 4 (C) 5 (D) 25

**2. nkanaz f s p d; n j h l h t h i r f S k; n j h l h f S k;
xU kj igngz ; tpdhffs;**

1. g d t U t d t w W s; v J n k a a h d f; \$ w w y y ?
(A) , a y; v z f s p d; f z k; N - y; t i u a i w n r a a g g l l n k a n a z ; k j i g G i l a r; r h h G x U n j h l h t h i r a h F k;
(B) x t n t h U r h h G k; x U n j h l h t h i r a p i d f; F w p f F k;
(C) x U n j h l h t h i r > K b t p y p v z z p f i f a p y; c W g G f; f i s f; n f h z b U f f y h k;
(D) x U n j h l h t h i r > K b T W v z z p f i f a p y; c W g G f; f i s f; n f h z b U f f y h k;
2. 1>1>2>3>5>8 ... v d w n j h l h t u p i r a p d; 8 M t J c W g G
(A) 25 (B) 24 (C) 23 (D) 21

3. $\frac{1}{2}, \frac{1}{6}, \frac{1}{12}, \frac{1}{20}, \dots$ vdw nj hl h; thpi rapy; c WgG $\frac{1}{20}$ -fF mLj j c WgG
 (A) $\frac{1}{24}$ (B) $\frac{1}{22}$ (C) $\frac{1}{30}$ (D) $\frac{1}{18}$
4. a,b,c,l,m vdgd \$lLj; nj hl h; thpi rapy; , Uggpd; a-4b+6c-4l+m =
 (A) 1 (B) 2 (C) 3 (D) 0
5. a,b,c vdgd xU \$lLj; nj hl h; thpi rapy; c ssd vdp; $\frac{a-b}{b-c} =$
 (A) $\frac{a}{b}$ (B) $\frac{b}{c}$ (C) $\frac{a}{c}$ (D) 1
6. $100n+10$ vdgJ xU nj hl h; thpi r; n MtJ c WgG vdp; mJ
 (A) xU \$lLj; nj hl h; thpi r (B) xU ngUfFj; nj hl h; thpi r (C) xU khwpyj; nj hl h; thpi r
 (D) xU \$lLj; nj hl h; thpi rAk; myy ngUfFj; nj hl h; thpi rAk; myy
7. a_1, a_2, a_3, \dots vdgd xU \$lLj; nj hl h; thpi rapy; c ssd.NkYk; $\frac{a_4}{a_7} = \frac{3}{2}$ vdp; 13tJ c WgG
 (A) $\frac{3}{2}$ (B) 0 (C) $12a_1$ (D) $14a_1$
8. a_1, a_2, a_3, \dots vdgd xU \$lLj; nj hl h; thpi r vdp; $a_5, a_{10}, a_{15}, \dots$ vdw nj hl h; thpi rahdJ
 (A) xU ngUfFj; nj hl h; thpi r (B) xU \$lLj; nj hl h; thpi r (C) xU \$lLj; nj hl h; thpi rAk; myy
 ngUfFj; nj hl h; thpi rAk; myy (D) xU khwpyj; nj hl h; thpi r
9. xU \$lLj; nj hl h; thpi rapd; mLj j Lj j %dW c WgGfs; k+2, 4k-6, 3k-2 vdp; k -d; Kj gg
 (A) 2 (B) 3 (C) 4 (D) 5
10. a,b,c,l,m,n vdgd \$lLj; nj hl h; thpi rapy; c ssd vdp; $3a+7, 3b+7, 3c+7, 3l+7, 3m+7, 3n+7$ vdw nj hl h; thpi r
 (A) xU ngUfFj; nj hl h; thpi r (B) xU \$lLj; nj hl h; thpi r (C) xU khwpyj; nj hl h; thpi r
 (D) xU \$lLj; nj hl h; thpi rAk; myy ngUfFj; nj hl h; thpi rAk; myy
11. xU ngUfFj; nj hl h; thpi rapy; 3 MtJ c WgG 2 vdp; mj d; Kj y; 5 c WgGfs; ngUfFwgyd;
 (A) 5^2 (B) 2^5 (C) 10 (D) 15
12. a,b,c vdgd xU ngUfFj; nj hl h; thpi rapy; Uggpd; vdp; $\frac{a-b}{b-c} =$
 (A) $\frac{a}{b}$ (B) $\frac{b}{a}$ (C) $\frac{a}{c}$ (D) $\frac{c}{b}$
13. $x, 2x+2, 3x+3$ vdgd xU ngUfFj; nj hl h; thpi rapy; c ssd vdp; $5x, 10x+10, 15x+15$ vdw nj hl h; thpi rahdJ
 (A) xU \$lLj; nj hl h; thpi r (B) xU ngUfFj; nj hl h; thpi r (C) xU khwpyj; nj hl h; thpi r
 (D) xU \$lLj; nj hl h; thpi rAk; myy ngUfFj; nj hl h; thpi rAk; myy
14. -3,-3,-3, ... vdw nj hl h; thpi rahdJ
 (A) xU \$lLj; nj hl h; thpi r kllk; (B) xU ngUfFj; nj hl h; thpi r kllk; (C) xU \$lLj; nj hl h; thpi rAk;
 myy ngUfFj; nj hl h; thpi rAk; myy (D) xU \$lLj; nj hl h; thpi r kwWk; ngUfFj; nj hl h; thpi r
15. xU ngUfFj; nj hl h; thpi rapd; Kj y; ehdF c WgGfs; ngUfFwgyd; 256> mj d; nghJ tpfj k; 4
 kwWk; mj d; Kj y; c WgG kpi f vz; vdp; mej ngUfFj; nj hl h; thpi rapd; 3 tJ c WgG
 (A) 8 (B) $\frac{1}{16}$ (C) $\frac{1}{32}$ (D) 16
16. xU ngUfFj; nj hl h; thpi rapy; $t_2 = \frac{3}{5}$ kwWk; $t_3 = \frac{1}{5}$ vdp; mj d; nghJ tpfj k;
 (A) $\frac{1}{5}$ (B) $\frac{1}{3}$ (C) 1 (D) 5
17. $x \neq 0$ vdp; $1 + \sec x + \sec^2 x + \sec^3 x + \sec^4 x + \sec^5 x =$
 (A) $(1 + \sec x)(\sec^2 x + \sec^3 x + \sec^4 x)$ (B) $(1 + \sec x)(1 + \sec^2 x + \sec^4 x)$
 (C) $(1 - \sec x)(\sec x + \sec^3 x + \sec^5 x)$ (D) $(1 + \sec x)(1 + \sec^3 x + \sec^4 x)$
18. $t_n = 3 - 5n$ vdgJ xU \$lLj nj hl h; thpi rapd; n MtJ c WgG vdp; mf; \$lLj nj hl h; thpi rapd; Kj y; n
 c WgGfs; \$Lj y;
 (A) $\frac{n}{2}[1 - 5n]$ (B) $n(1 - 5n)$ (C) $\frac{n}{2}(1 + 5n)$ (D) $\frac{n}{2}(1 + n)$
19. a^{-n}, a^m, a^{m+n} vdw ngUfFj; nj hl h; thpi rapd; nghJ tpfj k; (A) a^m (B) a^{-m} (C) a^n (D) a^{-n}
20. $1+2+3+\dots+n = k$ vdp; $1^3+2^3+3^3+\dots+n^3$ vdgJ (A) k^2 (B) k^3 (C) $\frac{k(k+1)}{2}$ (D) $(k+1)^3$
21. fb; fz; \$wWfs; vJ j twhdJ?
 (A) $\{a_j\}_{j=1}^{\infty} - I$ $g(k) = a_k, \forall k \in N$ vd ti uaWf;fggl; $g: N \rightarrow R$ vdw rhhghf fUj yhk; (B) xU nj hl h;
 thpi rapy; KbTwh vz z pfi fapy; c WgGfs; , Uf;f yhk; (C) xU rhhghdJ nj hl h; thpi rahf , Uf;f
 Ntz ba mtrpak; , yi y. (D) $f: N \rightarrow R$, $qf f(x) = 2x + 1, x \in R$ vdw rhhghdJ xU nj hl h; thpi r
 MFk;

22. $\frac{2}{5} > \frac{6}{25} > \frac{18}{125} > \frac{54}{625} > \dots$ vdW ngUfFj ; nj hl h; thpi rapd; nghJ tpfj k;
 (m) $\frac{2}{5}$ (M) 5 (,) $\frac{3}{5}$ (<) $\frac{4}{5}$

**3., awfz j k;
 xU kj jngz ; tpdhffs;**

- $6x-2y=3, kx-y=2$ vdW nj hFggwF xNu xU j hT c z nl dpy;
 (A) $k=3$ (B) $k \neq 3$ (C) $k=4$ (D) $k \neq 4$
- , U khwpspy; c ss Nehpay; rkdghLfspd; nj hFgg xUqfi kahj J vdlpy; mtwmpd; ti ugl qfs;
 (A) xdwpd; kU xdw nghUeJk; (B) xU Gsspay; ntlbfnfhsS k;
 (C) vej g; Gsspayk; ntlbfnfhsshJ (D) x - mri r ntlLk;
- $x-4y=8, 3x-12y=24$ vdDk; rkdghLfspd; nj hFggwF
 (A) Kbttyp vz z pfi fapy; j hTfs; c ssd. (B) j hT , yi y
 (C) xNu xU j hT klLk; c z L (D) xU j hT , Uffyhk; myyJ , yyhkYk; , Uffyhk;
- $p(x) = (k+4)x^2 + 13x + 3k$ vdDk; gy;YWgGf; Nfhi tapd; xU Grrpak; kwnwhdmpd; j i yfbpahdhy; k -d;
 Kj jgG (A) 2 (B) 3 (C) 4 (D) 5
- $f(x) = 2x^2 + (p+3)x + 5$ vdDk; gy;YWgGf; Nfhi tapd; , U Grrpaqfspd; \$Lj y; Grrpankdpy; p-d; kj jgG
 (A) 3 (B) 4 (C) -3 (D) -4
- x^2-2x+7 vdgi j $x+4$ My; tFfFk; NghJ fpi l fFk; kj p (A) 28 (B) 29 (C) 30 (D) 31
- x^3-5x^2+7x-4 vdgi j $x-1$ My; tFfFk; NghJ fpi l fFk; <T
 (A) x^2+4x+3 (B) x^2-4x+3 (C) x^2-4x-3 (D) x^2+4x-3
- (x^3+1) kwWk; x^4-1 Mfjatwmpd; klngh.t (A) x^3-1 (B) x^3+1 (C) $x+1$ (D) $x-1$
- $x^2-2xy+y^2$ kwWk; x^4-y^4 Mfjatwmpd; klngh.t (A) 1 (B) $x+y$ (C) $x-y$ (D) x^2-y^2
- x^3-a^3 kwWk; $(x-a)^2$ Mfjatwmpd; klngh.k
 (A) $(x^3-a^3)(x+a)$ (B) $(x^3-a^3)(x-a)^2$ (C) $(x-a)^2(x^2+ax+a^2)$ (D) $(x+a)^2(x^2+ax+a^2)$
- $k \in \mathbb{N}$ vdDk; NghJ a^k, a^{k+3}, a^{k+5} Mfjatwmpd; klngh.k (A) a^{k+9} (B) a^k (C) a^{k+6} (D) a^{k+5}
- $\frac{x^2+5x+6}{x^2-x-6}$ vdDk; tpfj KW Nfhi tapd; kpf RUqfja tbt; (A) $\frac{x-3}{x+3}$ (B) $\frac{x+3}{x-3}$ (C) $\frac{x+2}{x-3}$ (D) $\frac{x-3}{x+2}$
- $\frac{a+b}{a-b}$ kwWk; $\frac{a^3-b^3}{a^3+b^3}$ Mfjad , U tpfj KW Nfhi tfs; vdlpy; mtwmpd; ngUffwgyd;
 (A) $\frac{a^2+ab+b^2}{a^2-ab+b^2}$ (B) $\frac{a^2-ab+b^2}{a^2+ab+b^2}$ (C) $\frac{a^2-ab-b^2}{a^2+ab+b^2}$ (D) $\frac{a^2+ab+b^2}{a^2-ab-b^2}$
- $\frac{x^2-25}{x+3}$ vdgi j $\frac{x+5}{x^2-9}$ My; tFfFk; NghJ fpi l fFk; <T
 (A) $(x-5)(x-3)$ (B) $(x-5)(x+3)$ (C) $(x+5)(x-3)$ (D) $(x+5)(x+3)$
- $\frac{a^3}{a-b}$ c l d; $\frac{b^3}{b-a}$ l f; \$l l fpi l fFk; Gj ja Nfhi t
 (A) $a^2 + ab + b^2$ (B) $a^2 - ab + b^2$ (C) $a^3 + b^3$ (D) $a^3 - b^3$
- $49(x^2-2xy-y^2)^2 - d$; thff%yk;
 (A) $7|x-y|$ (B) $7(x+y)(x-y)$ (C) $7(x+y)^2$ (D) $7(x-y)^2$
- $x^2+y^2+z^2-2xy+2yz-2zx - d$; thff%yk; (A) $|x+y-z|$ (B) $|x-y+z|$ (C) $|x+y+z|$ (D) $|x-y-z|$
- $121x^4y^8z^6(1-m)^2 - d$; thff%yk;
 (A) $11x^2y^4z^4|l-m|$ (B) $11x^4y^4|z^3(l-m)|$ (C) $11x^2y^4z^6|l-m|$ (D) $11x^2y^4|z^3(l-m)|$
- $ax^2+bx+c=0$ vdW rkdghl bd; %yqfs; rkk; vdlpy; c - d; kj jgG
 (A) $\frac{b^2}{2a}$ (B) $\frac{b^2}{4a}$ (C) $-\frac{b^2}{2a}$ (D) $-\frac{b^2}{4a}$
- $x^2+5kx+16=0$ vdW rkdghl bwF nkanaz ; %yqfs; , yi ynady;
 (A) $k > \frac{8}{5}$ (B) $k > -\frac{8}{5}$ (C) $-\frac{8}{5} < k < \frac{8}{5}$ (D) $0 < k < \frac{8}{5}$
- $3-i$ a xU %ykhff; nfhz l , Ugbr; rkdghL
 (A) $x^2-6x-5=0$ (B) $x^2+6x-5=0$ (C) $x^2-5x-6=0$ (D) $x^2-5x+6=0$
- $x^2-bx+c=0$ kwWk; $x^2+bx-a=0$ Mfja rkdghLfspd; nghJ thd %yk;
 (A) $\frac{c+a}{2b}$ (B) $\frac{c-a}{2b}$ (C) $\frac{c+b}{2a}$ (D) $\frac{a+b}{2c}$
- $a \neq 0$, vd mi kej rkdghL $ax^2+bx+c=0 - d$; %yqfs; α kwWk β vdlpy; gdtUt dtwWs; vJ nkaayy?
 (A) $a^2 + \beta^2 = \frac{b^2-2ac}{a^2}$ (B) $a\beta = \frac{c}{a}$ (C) $\alpha + \beta = \frac{b}{a}$ (D) $\frac{1}{\alpha} + \frac{1}{\beta} = -\frac{b}{c}$

24. $ax^2+bx+c=0$ vdw , Ugbr; rkdghl bd; %yqfS; α kwWk; β vdlpy $\frac{1}{\alpha}$ kwWk; $\frac{1}{\beta}$ Mfjadtwi w %yqfShff; nfhz } , Ugbr; rkdghL
 (A) $ax^2+bx+c=0$ (B) $bx^2+ax+c=0$ (C) $cx^2+bx+a=0$ (D) $cx^2+ax+b=0$
25. $b=a+c$ vdlpy $ax^2+bx+c=0$ vdw rkdghl bd; %yqfS; rkk; vdlpy
 (A) $a=c$ (B) $a=-c$ (C) $a=2c$ (D) $a=-2c$
26. c WgGfS; $5xy$ kwWk; $28ab$ Mfjadtwi; kPngh.t
 (A) $140xyab$ (B) fhz , ayhJ (C) 1 (D) 0
27. $6x^2y, 9x^2yz, 12x^2y^2z$ Mfjadtwi; kPngh.k (m) $36x^2y^2z$ (M) $48x^2y^2z^2$ (,) $96x^2y^2z^2$ (<) $72xy^2z$

4.mz pfs;

xU kj pngz ; tpdhffs;

1. gpd:Ut dtwS; vej \$wW nkaahdj yy?
 (A) j i raiy mz pahdJ xU rJu mz pahFk; (B) %i ytpi mz pahdJ xU rJu mz pahFk.
 (C) j i raiy mz pahdJ xU %i ytpi mz pahFk; (D) %i ytpi mz pahdJ xU j i raiy mz pahFk;
2. $A = [a_{ij}]_{m \times n}$ vdgJ xU rJu mz p vdlpy
 (A) $m < n$ (B) $m > n$ (C) $m = 1$ (D) $m = n$
3. $\begin{pmatrix} 3x+7 & 5 \\ y+1 & 2-3x \end{pmatrix} = \begin{pmatrix} 1 & y-2 \\ 8 & 8 \end{pmatrix}$ vdlpy x kwWk; y fspd; kj pGfS; Ki wNa
 (A) $-2,7$ (B) $-\frac{1}{3}, 7$ (C) $-\frac{1}{3}, -\frac{2}{3}$ (D) $2, -7$
4. $A = \begin{pmatrix} 1 & -2 & 3 \end{pmatrix}$ $B = \begin{pmatrix} -1 \\ 2 \\ -3 \end{pmatrix}$ vdlpy; $A+B =$
 (A) $(0 \ 0 \ 0)$ (B) $\begin{pmatrix} 0 \\ 0 \\ 0 \end{pmatrix}$ (C) (-14) (D) ti uaWffggl tpyi y
5. xU mz pad; thpi r 2×3 vdlpy; mtiz pary; cSS c WgGfS;pd; vz z pfi f (A) 5 (B) 6 (C) 2 (D) 3
6. $\begin{pmatrix} 8 & 4 \\ x & 8 \end{pmatrix} = 4 \begin{pmatrix} 2 & 1 \\ 1 & 2 \end{pmatrix}$ vdlpy x - d; kj pG (A) 1 (B) 2 (C) $\frac{1}{4}$ (D) 4
7. $A - d$; thpi r 3×4 kwWk; $B - d$; thpi r 4×3 vdlpy; $BA - d$; thpi r
 (A) 3×3 (B) 4×4 (C) 4×3 (D) ti uaWffggl tpyi y
8. $A X \begin{pmatrix} 1 & 1 \\ 0 & 2 \end{pmatrix} = \begin{pmatrix} 1 & 2 \end{pmatrix}$ vdlpy; $A - d$; thpi r (A) 2×1 (B) 2×2 (C) 1×2 (D) 3×2
9. A kwWk; B vdgd rJu mz pfs; NkYk; $AB = I$ kwWk; $BA = I$ vdlpy; B vdgJ
 (A) myF mz p (B) Grrpa mz p (C) $A - d$; ngUffiy; NehkhW mz p (D) $-A$
10. $\begin{pmatrix} 1 & 2 \\ 2 & 1 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 2 \\ 4 \end{pmatrix}$ vdlpy; x kwWk; y fspd; kj pG (A) 2,0 (B) 0,2 (C) 0,-2 (D) 1,1
11. $A = \begin{pmatrix} 1 & -2 \\ -3 & 4 \end{pmatrix}$ kwWk; $A+B=0$ vdlpy; $B =$
 (A) $\begin{pmatrix} 1 & -2 \\ -3 & 4 \end{pmatrix}$ (B) $\begin{pmatrix} -1 & 2 \\ 3 & -4 \end{pmatrix}$ (C) $\begin{pmatrix} -1 & -2 \\ -3 & -4 \end{pmatrix}$ (D) $\begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$
12. $A = \begin{pmatrix} 4 & -2 \\ 6 & -3 \end{pmatrix}$ vdlpy; $A^2 =$
 (A) $\begin{pmatrix} 16 & 4 \\ 36 & 9 \end{pmatrix}$ (B) $\begin{pmatrix} 8 & -4 \\ 12 & -6 \end{pmatrix}$ (C) $\begin{pmatrix} -4 & 2 \\ -6 & 3 \end{pmatrix}$ (D) $\begin{pmatrix} 4 & -2 \\ 6 & -3 \end{pmatrix}$
13. $A - d$; thpi r $m \times n$ kwWk; $B - d$; thpi r $p \times q$ vdf. A kwWk; B Mfjadtwi; \$Lj y; fhz , aYnkdiy
 (A) $m=p$ (B) $n=q$ (C) $n=p$ (D) $m=p, n=q$
14. $\begin{pmatrix} a & 3 \\ 1 & 2 \end{pmatrix} \begin{pmatrix} 2 \\ -1 \end{pmatrix} = \begin{pmatrix} 5 \\ 0 \end{pmatrix}$ vdlpy; $a - d$; kj pG (A) 8 (B) 4 (C) 2 (D) 11
15. $A = \begin{pmatrix} \alpha & \beta \\ \gamma & -\alpha \end{pmatrix}$ kwWk; $A^2 = I$ vdlpy
 (A) $1 + \alpha^2 + \beta\gamma = 0$ (B) $1 - \alpha^2 + \beta\gamma = 0$ (C) $1 - \alpha^2 - \beta\gamma = 0$ (D) $1 + \alpha^2 - \beta\gamma = 0$
16. $A = [a_{ij}]_{2 \times 2}$ kwWk; $a_{ij} = i+j$ vdlpy; $A =$
 (A) $\begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix}$ (B) $\begin{pmatrix} 2 & 3 \\ 3 & 4 \end{pmatrix}$ (C) $\begin{pmatrix} 2 & 3 \\ 4 & 5 \end{pmatrix}$ (D) $\begin{pmatrix} 4 & 5 \\ 6 & 7 \end{pmatrix}$
17. $\begin{pmatrix} -1 & 0 \\ 0 & 1 \end{pmatrix} \begin{pmatrix} a & b \\ c & d \end{pmatrix} = \begin{pmatrix} 1 & 0 \\ 0 & -1 \end{pmatrix}$ vdlpy; a, b, c kwWk; d Mfjadtwi; kj pGfS; Ki wNa
 (A) $-1, 0, 0, -1$ (B) $1, 0, 0, 1$ (C) $-1, 0, 1, 0$ (D) $1, 0, 0, 0$

18. $A = \begin{pmatrix} 7 & 2 \\ 1 & 3 \end{pmatrix}$ kWwK; $A + B = \begin{pmatrix} -1 & 0 \\ 2 & -4 \end{pmatrix}$ vdlpy> mz p B =
 (A) $\begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$ (B) $\begin{pmatrix} 6 & 2 \\ 3 & -1 \end{pmatrix}$ (C) $\begin{pmatrix} -8 & -2 \\ 1 & -7 \end{pmatrix}$ (D) $\begin{pmatrix} 8 & 2 \\ -1 & 7 \end{pmatrix}$
19. $(5x + 1) \begin{pmatrix} 2 \\ -1 \\ 3 \end{pmatrix} = (20)$ vdlpy> x - d; kj igG
 (A) 7 (B) -7 (C) $\frac{1}{7}$ (D) 0
20. A kWwK; B vdgd xNu thpi rAi la rJu mz pfs; vdlpy> fbffz i i tfsy; vJ nkaahFK?
 (A) $(AB)^T = A^T B^T$ (B) $(A^T B)^T = A^T B^T$ (C) $(AB)^T = BA$ (D) $(AB)^T = B^T A^T$

5. Majnjhi y tbtay;
xU kj gngz ; tpdhffs;

1. (a,-b), (3a,5b) Mfpa Gsspi s , i z fFk; NehfNfhl Lj Jz bd; eLgGssp
 (A) (-a,2b) (B) (2a,4b) (C) (2a,2b) (D) (-a,-3b)
2. A(1,-3), B(-3,9) Mfpa Gsspi s , i z fFk; NehfNfhl Lj Jz i l 1:3 vdw tpfij j j py; ghpfFK; Gssp P
 (A) (2,1) (B) (0,0) (C) $(\frac{5}{3}, 2)$ (D) (1,-2)
3. A(3,4), B(14,-3) Mfpatwi w , i z fFk; NehfNfhl Lj Jz L x - mri r P , y; rej pffpwJ vdlpy> mfnfhl Lj Jz i l P ghpfFK; tpfij k;
 (A) 4 : 3 (B) 3 : 4 (C) 2 : 3 (D) 4 : 1
4. (-2,-5), (-2,12), (10,-1) Mfpa Gsspi s Ki dfsdff; nfhz i Kfnfz j j pd; eLfnfhl L i kak;
 (A) (6,6) (B) (4,4) (C) (3,3) (D) (2,2)
5. (1,2), (4,6), (x,6), (3,2) vdgd , t;thpi ray; Xh; , i z fuj j pd; Ki dfs; vdlpy> x - d; kj igG
 (A) 6 (B) 2 (C) 1 (D) 3
6. (0,0), (2,0), (0,2) Mfpa Gsspfshy; mi kAk; Kfnfz j j pd; gugG
 (A) 1 rJu.myFfs; (B) 2 rJu.myFfs; (C) 4 rJu.myFfs; (D) 8 rJu.myFfs;
7. (1,1), (0,1), (0,0), (1,0) Mfpa Gsspfshy; mi kAk; ehwfuj j pd; gugG
 (A) 3 rJu.myFfs; (B) 2 rJu.myFfs; (C) 4 rJu.myFfs; (D) 1 rJu.myFfs;
8. x - mrRfF , i z ahd NehfNfhl bd; rha:Tf; Nfz k;
 (A) 0° (B) 60° (C) 45° (D) 90°
9. (3,-2), (-1,a) Mfpa Gsspi s , i z fFk; NehfNfhl bd; rha:T $-\frac{3}{2}$ vdlpy> a -d; kj igG
 (A) 1 (B) 2 (C) 3 (D) 4
10. (-2,6), (4,8) Mfpa Gsspi s , i z fFk; NehfNfhl bwFr; nrqFj j hd NehfNfhl bd; rha:T
 (A) $\frac{1}{3}$ (B) 3 (C) -3 (D) $-\frac{1}{3}$
11. $9x-y-2=0$, $2x+y-9=0$ Mfpa NehfNfhlFs; rej pffK; Gssp
 (A) (-1,7) (B) (7,1) (C) (1,7) (D) (-1,-7)
12. $4x+3y-12=0$, vdw NehfNfhl y - mri r ntlLk; Gssp
 (A) (3,0) (B) (0,4) (C) (3,4) (D) (0,-4)
13. $7y-2x=11$ vdw NehfNfhl bd; rha:T
 (A) $-\frac{7}{2}$ (B) $\frac{7}{2}$ (C) $\frac{2}{7}$ (D) $-\frac{2}{7}$
14. (2,-7) vdw Gssp topr; nrytJk> x - mrrpwF , i z ahdJ khd NehfNfhl bd; rkdghL
 (A) x=2 (B) x=-7 (C) y=-7 (D) y=2
15. $2x-3y+6=0$ vdw NehfNfhl bd; x , y - ntlLj Jz Lfs; Ki wNa
 A) 2,3 (B) 3,2 (C) -3,2 (D) 3,-2
16. xU tllj j pd; i kak; (-6,4). xU tllj j pd; xU Ki d (-12,8) vdlpy> mj d; kWKi d
 (A) (-18,12) (B) (-9,6) (C) (-3,2) (D) (0,0)
17. Mj igGssp Gssp topr; nrytJk> $2x+3y-7=0$ vdw Nfhl bwFr; nrqFj J khd NehfNfhl bd; rkdghL
 (A) $2x+3y=0$ (B) $3x-2y=0$ (C) $y+5=0$ (D) $y-5=0$
18. y - mrrpwF , i z ahdJk; (-2,5) vdw Gssp topr; nrytJkhd NehfNfhl bd; rkdghL
 (A) x-2=0 (B) x+2=0 (C) y+5=0 (D) y-5=0
19. (2,5), (4,6), (a,a) Mfpa Gsspfs; xNu NehfNfhl by; mi kfjdw vdlpy> a - d; kj igG
 (A) -8 (B) 4 (C) -4 (D) 8

20. $y=2x+k$ vdw NehfNfhL ($1>2$) vdw Gssp top; nryfjdwJ vdy> k -d; kj jgG
 (A) 0 (B) 4 (C) 5 (D) -3
21. rhaT 3 MfTK> $y - ntlLj ; z L -4$ MfTK; c ss NehfNfhL bd; rkdghL
 (A) $3x-y-4=0$ (B) $3x+y-4=0$ (C) $3x-y+4=0$ (D) $3x+y+4=0$
22. $y=0$ kwWk; $x=-4$ Mfpa NehfNfhLfs; ntlLk; Gssp
 (A) (0,-4) (B) (-4,0) (C) (0,4) (D) (4,0)
23. $3x+6y+7=0$, kwWk; $2x+ky=5$ Mfpa NehfNfhLfs; nrqFjj hdi t vdy> k -d; kj jgG Gssp
 (A) 1 (B) -1 (C) 2 (D) $\frac{1}{2}$
24. fbffhZ k; vej Gsspfs; nj hfGg xNu NehfNfhL by; mi kAk?
(A) (1,-1), (-1,1), (0,0) (B) (1,-1), (-1,1), (0,1) (C) (1,-1), (-1,1), (1,0) (D) (1,-1), (-1,1), (1,1)
25. (0>0) (>0) kwWk; (0>1) Mfpatwi w Ki dfshff; nfhz l Kfnfhz jj pd; RwwsT
 (m) $\sqrt{2}$ (M) 2 (,) $2 + \sqrt{2}$ (<) $2 - \sqrt{2}$

6. tbtay;

xU kj jngz ; tpdhffs;

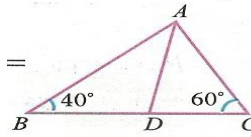
1. $\Delta ABC - d$; gffqfs; AB kwWk; AC Mfpatwi w xU NehfNfhL Ki wNa D kwWk; E - fsy;
 ntlLfwJ. NKYk> mfnfhL BC - fF , i z vdy> $\frac{AE}{AC} =$

- (A) $\frac{AD}{DB}$ (B) $\frac{AD}{AB}$ (C) $\frac{DE}{BC}$ (D) $\frac{AD}{EC}$

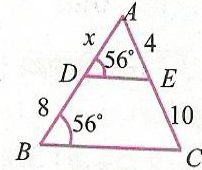
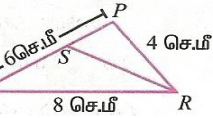
2. $\Delta ABC - y$; AB kwWk; AC - fsyYss Gsspfs; D kwWk; E vdgD DE || BC vdwthW c ssd.
 NKYk> AD = 3 nr.kp DB = 2 nr.kp kwWk; AE = 2.7 nr.kp vdy> AC =
 (A) 6.5 nr.kp (B) 4.5 nr.kp (C) 3.5 nr.kp (D) 5.5 nr.kp

3. $\Delta PQR - y$; RS vdgJ $\angle R - d$; Nfhz c lGw , U rkntl b.
 PQ = 6 nr.kp QR = 8 nr.kp RP = 4 nr.kp vdy> PS =
 (A) 2 nr.kp (B) 4 nr.kp (C) 3 nr.kp (D) 6 nr.kp

4. gljj py; $\frac{AB}{AC} = \frac{BD}{DC} \rightarrow \angle B = 40^\circ$ kwWk; $\angle C = 60^\circ$ vdy> $\angle BAD =$
 (A) 30° (B) 50° (C) 80° (D) 40°



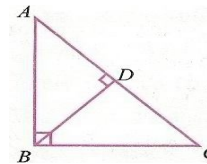
5. gljj py x - d; kj jghdJ
 (A) 4.2 myFfs; (B) 3.2 myFfs; (C) 0.8 myFfs; (D) 0.4 myFfs;



6. ΔABC kwWk; $\Delta DEF - fsy$; $\angle B = \angle E$ kwWk; $\angle C = \angle F$ vdy>

- (A) $\frac{AB}{DE} = \frac{CA}{EF}$ (B) $\frac{BC}{EF} = \frac{AB}{FD}$ (C) $\frac{AB}{DE} = \frac{BC}{EF}$ (D) $\frac{CA}{FD} = \frac{AB}{EF}$

7. nfhLffggll gljj pWfg> nghUej hj \$wwpi df; fz l wpf.
 (A) $\Delta ADB \sim \Delta ABC$ (B) $\Delta ABD \sim \Delta ABC$
 (C) $\Delta BDC \sim \Delta ABC$ (D) $\Delta ADB \sim \Delta BDC$



8. 12 kp eSkss xU NehfFjj hd Frrp 8 kp eSkss epi yj ; j i uapy; Vwglj ; J fWJ. mNj Neuj j py;
 xU NfhGuk; 40 kp eSkss epi yj ; j i uapy; Vwglj ; J fWJ vdy> NfhGuj j pd; c auk;
 (A) 40 kp (B) 50 kp (C) 75 kp (D) 60 kp

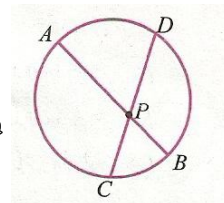
9. , U tbnthjj Kfnfhz qfs; gffqfs; tpfjk ; 2:3 vdy> mtwwpd; guggsTfs; tpfjk ;
 (A) 9 : 4 (B) 4 : 9 (C) 2 : 3 (D) 3 : 2

10. Kfnfhz qfs; ABC kwWk; DEF tbnthjji t. mtwwpd; guggsTfs; Ki wNa 100 nr.kp 49 nr.kp
 kwWk; BC = 8.2 nr.kp vdy> EF =
 (A) 5.47 nr.kp (B) 5.74 nr.kp (C) 6.47 nr.kp (D) 6.74 nr.kp

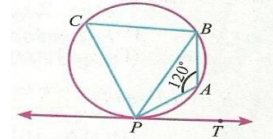
11. , U tbnthjj Kfnfhz qfs; RwwsTfs; Ki wNa 24 nr.kp 18 nr.kp vdf. Kj y; Kfnfhz jj pd; xU
 gffk; 8 nr.kp vdy> kwnwhU Kfnfhz jj pd; mj wF xjj gffk;
 (A) 4 nr.kp (B) 3 nr.kp (C) 9 nr.kp (D) 6 nr.kp

12. AB , CD vdgD xU tlljj pd; , U ehz fs; mi t ell jggLk; NghJ P - y;
 rej pffpdwd kwWk; AB = 5 nr.kp AP = 8 nr.kp CD = 2 nr.kp vdy> PD =
 (A) 12 nr.kp (B) 5 nr.kp (C) 6 nr.kp (D) 4 nr.kp

13. gljj py; ehz fs; AB kwWk; CD vdgD P - y; ntlLfpdwd. AB = 16 nr.kp
 PD = 8 nr.kp vdy> PC = 6 nr.kp kwWk; AP > PB vdy> AP =
 (A) 8 nr.kp (B) 4 nr.kp (C) 12 nr.kp (D) 6 nr.kp

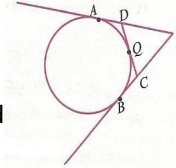


14. P – vdDk; GssP tll i kak; O – tpyUeJ 26 nr.kP nj hi yty; c ssJ. P – aypyUeJ tlljjwF ti uagglj PT vdw nj hLNfhL bcd; eSk; 10 nr.kP vdy; OT =
 (A) 36 nr.kP (B) 20nr.kP (C) 18nr.kP (D) 24 nr.kP



15. gljjjy; $\angle PAB = 120^\circ$ vdy; $\angle BPT =$
 (A) 120° (B) 30° (C) 40° (D) 60°
16. O – i t i kakhf cila tlljjwF PA, PB vdgD ntsjGssP P - aypyUeJ ti uagglj; nj hLNfhLfs; , jnj hLNfhLFS fF , i lay; c ss Nfhz k; 40° vdy; $\angle POA =$
 (A) 70° (B) 80° (C) 50° (D) 60°

17. gljjjy; PA, PB vdgD tlljjwF ntsNaAss GssP P - aypyUeJ ti uagglj; nj hLNfhLfs; NKYk; CD vdgJ Q vdw GssP; tlljjwF nj hLNfhL. PA = 8 nr.kP CQ = 3 nr.kP vdy; PC =
 (A) 11 nr.kP (B) 5nr.kP (C) 24 nr.kP (D) 38nr.kP



18. nrqNfhz $\triangle ABC$ - y; $\angle B = 90^\circ$ kWwK; $BD \perp AC$. BD = 8 nr.kP AD = 4 nr.kP vd
 (A) 24 nr.kP (B) 16 nr.kP (C) 32 nr.kP (D) 8nr.kP
19. , uz l tbnthjj KfNfhz qfs; guggSTfs; Ki wNa 16 nr.kP 36 nr.kP. K j y; kTnTnz j j pd; Fj; J auk; 3 nr.kP vdy; kwnwhU KfNfhz j j j; m j i d x j j Fj; J auk;
 (A) 6.5 nr.kP (B) 6 nr.kP (C) 4 nr.kP (D) 4.5 nr.kP

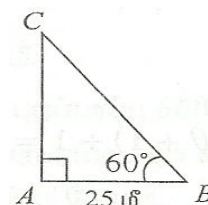
20. , U tbnthjj KfNfhz qfs; $\triangle ABC$ kWwK; $\triangle DEF$ Mfjatwmpd; RwwsTfs; Ki wNa 36 nr.kP 24 nr.kP NKYk; DE=10 nr.kP vdy; AB=
 (A) 12 nr.kP (B) 20 nr.kP (C) 15 nr.kP (D) 18 nr.kP

21. nfhLf;fgglj gljjjy; c ss ehwfuk; APOQ - d; RwwsT 26 nr.kP kWwK; AP=10 nr.kP O vdgJ tlljjjpd; i kak; AP kWwK; AQ Mfjai t A aypyUeJ ti uagglk; nj hLNfhLfs; vdy; tlljjjpd; Muk;
 (A) 6nr.kP (B) 3nr.kP (C) 8nr.kP (D) 16nr.kP

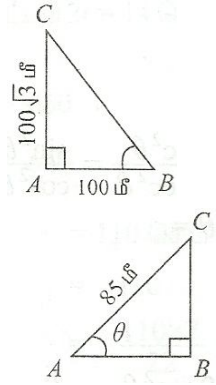
22. AB kWwK; CD vdw , U ehz fs; xU tlljjjpd; c lGwkhf P vdw GssP; ntlbf; nfhSfjdw. AB = 7 > AP = 4 > CP = 2 vdy; CD =
 (m) 4 (M) 8 (,) 6 (<) 10

7. KfNfhz tpy;
xU kj jngz; tpdhfs;

- $(1 - \sin^2\theta)\sec^2\theta =$
 (A) 0 (B) 1 (C) $\tan^2\theta$ (D) $\cos^2\theta$
- $(1 + \tan^2\theta)\sin^2\theta =$
 (A) $\sin^2\theta$ (B) $\cos^2\theta$ (C) $\tan^2\theta$ (D) $\cot^2\theta$
- $(1 - \cos^2\theta)(1 + \cot^2\theta) =$
 (A) $\sin^2\theta$ (B) 0 (C) 1 (D) $\tan^2\theta$
- $\sin(90^\circ - \theta)\cos\theta + \cos(90^\circ - \theta)\sin\theta =$
 (A) 1 (B) 0 (C) 2 (D) -1
- $1 - \frac{\sin^2\theta}{1+\cos\theta} =$
 (A) $\cos\theta$ (B) $\tan\theta$ (C) $\cot\theta$ (D) $\operatorname{cosec}\theta$
- $\cos^4x - \sin^4x =$
 (A) $2\sin^2x - 1$ (B) $2\cos^2x - 1$ (C) $1 + 2\sin^2x$ (D) $1 - 2\cos^2x$
- $\tan\theta = \frac{a}{x}$ vdy; $\frac{x}{\sqrt{a^2+x^2}}$ - d; kj jG
 (A) $\cos\theta$ (B) $\sin\theta$ (C) $\operatorname{cosec}\theta$ (D) $\sec\theta$
- $x = a \sec\theta, y = b \tan\theta$ vdy; $\frac{x^2}{a^2} - \frac{y^2}{b^2}$ - d; kj jG
 (A) 1 (B) -1 (C) $\tan^2\theta$ (D) $\operatorname{cosec}^2\theta$
- $\frac{\sec\theta}{\cot\theta + \tan\theta} =$
 (A) $\cot\theta$ (B) $\tan\theta$ (C) $\sin\theta$ (D) $-\cot\theta$
- $\frac{\sin(90^\circ - \theta)\sin\theta}{\tan\theta} + \frac{\cos(90^\circ - \theta)\cos\theta}{\cot\theta} =$
 (A) $\tan\theta$ (B) 1 (C) -1 (D) $\sin\theta$
- gljjjy; AC =
 (A) 25 kP (B) $25\sqrt{3}$ kP (C) $\frac{25}{\sqrt{3}}$ kP (D) $25\sqrt{2}$ kP



12. $\angle ABC =$
 (A) 45° (B) 30° (C) 60° (D) 50°
13. $\sin \theta = \frac{15}{17}$ $\cos \theta =$
 (A) $\frac{8}{17}$ (B) $\frac{6}{17}$ (C) $\frac{9}{17}$ (D) $\frac{7}{17}$
14. $(1 + \tan^2 \theta)(1 - \sin \theta)(1 + \sin \theta) =$
 (A) $\cos^2 \theta - \sin^2 \theta$ (B) $\sin^2 \theta - \cos^2 \theta$ (C) $\sin^2 \theta + \cos^2 \theta$ (D) 0
15. $(1 + \cot^2 \theta)(1 - \cos \theta)(1 + \cos \theta) =$
 (A) $\tan^2 \theta - \sec^2 \theta$ (B) $\sin^2 \theta - \cos^2 \theta$ (C) $\sec^2 \theta - \tan^2 \theta$ (D) $\cos^2 \theta - \sin^2 \theta$
16. $(\cos^2 \theta - 1)(\cot^2 \theta + 1) + 1 =$
 (A) 1 (B) -1 (C) 2 (D) 0
17. $\frac{1 + \tan^2 \theta}{1 + \cot^2 \theta} =$
 (A) $\cos^2 \theta$ (B) $\tan^2 \theta$ (C) $\sin^2 \theta$ (D) $\cot^2 \theta$
18. $\sin^2 \theta + \frac{1}{1 + \tan^2 \theta} =$
 (A) $\operatorname{cosec}^2 \theta + \cot^2 \theta$ (B) $\operatorname{cosec}^2 \theta - \cot^2 \theta$ (C) $\cot^2 \theta - \operatorname{cosec}^2 \theta$ (D) $\sin^2 \theta - \cos^2 \theta$
19. $9 \tan^2 \theta - 9 \sec^2 \theta =$
 (A) 1 (B) 0 (C) 9 (D) -9
20. $1 - \frac{\cos^2 \theta}{1 - \sin \theta} =$ (A) $\sin \theta$ (B) $\cos \theta$ (C) $-\cos \theta$ (D) $-\sin \theta$
21. $\frac{1}{\tan \theta + \cot \theta} =$ (m) $\sin \theta + \cos \theta$ (M) $\sin \theta \cos \theta$ (.) $\sin \theta - \cos \theta$ (<) $\operatorname{cosec} \theta + \cot \theta$



8. mstjaj;

xU kj jnggz ; tpdhffs;

1. 1 nr.kp Mukk; kwWk; 1 nr.kp cauKk; nfhz j xU Neh; tll c Ui sapd; ti sgugG
 (A) π nr.kp (B) 2π nr.kp (C) 3π nr.kp (D) 2 nr.kp
2. Neh; tll c Ui sapd; MukhdJ mj d; cau j j y; ghj p vdy; mj d; nkj j g GwggugG
 (A) $\frac{3}{2}\pi h$ r.m (B) $\frac{2}{3}\pi h^2$ r.m (C) $\frac{3}{2}\pi h^2$ r.m (D) $\frac{2}{3}\pi h$ r.m
3. Neh; tll c Ui sapd; mbgf f gugG 80 r.nr.kp mj d; cau; 5 nr.kp vdy; \$kgpd; fdmsT
 (A) 400 nr.kp (B) 16 nr.kp (C) 200 nr.kp (D) $\frac{400}{3}$ nr.kp
4. xU Neh; tll c Ui sapd; nkj j GwggugG 200π r.nr.kp kwWk; mj d; Muk; 5 nr.kp vdy; mj d; cau;
 kwWk; Muj j pd; \$Lj y;
 (A) 20 nr.kp (B) 25 nr.kp (C) 30 nr.kp (D) 15 nr.kp
5. a myFFs; Mukk; b myFFs; cauKk; nfhz j xU Neh; tll c Ui sapd; ti sgugG
 (A) $\pi a^2 b$ r. nr.kp (B) $2\pi ab$ r. nr.kp (C) 2π r. nr.kp (D) 2 r. nr.kp
6. xU Neh; tll f; \$kG kwWk; Neh; tll c Ui sapd; Mukk; cauKk; Ki wNa rkk; c Ui sapd; fd
 msT 120 nr.kp vdy; \$kgpd; fdmsT
 (A) 1200 nr.kp (B) 360 nr.kp (C) 40 nr.kp (D) 90 nr.kp
7. Neh; tll f; \$kgpd; tll k; kwWk; cau; Ki wNa 12 nr.kp 8 nr.kp vdy; mj d; rhAauk;
 (A) 10 nr.kp (B) 20 nr.kp (C) 30 nr.kp (D) 96 nr.kp
8. Neh; tll f; \$kgpd; mbrRwwsT kwWk; rhAauk; Ki wNa 120π nr.kp kwWk; 10 nr.kp vdy; mj d;
 ti sgugG (A) 1200π nr.kp (B) 600π nr.kp (C) 300π nr.kp (D) 600 nr.kp
9. Neh; tll f; \$kgpd; fdmsT kwWk; mbgf f g; gugG Ki wNa 48π nr.kp kwWk; 12π nr.kp vdy; mj d;
 cau; (A) 6 nr.kp (B) 8 nr.kp (C) 10 nr.kp (D) 12 nr.kp
10. 5 nr.kp cauKk; 48 nr.kp mbgf f g; gugG; nfhz j xU Neh; tll f; \$kgpd; fdmsT
 (A) 240 nr.kp (B) 120 nr.kp (C) 80 nr.kp (D) 480 nr.kp
11. , uz L c Ui sfspd; cauqfs; Ki wNa 1 : 2 kwWk; mtwwpd; Muqfs; Ki wNa 2 : 1 Mfja
 tpfij qfsypluggpd; mtwwpd; fd msTfspd; tpfij k;
 (A) 4 : 1 (B) 1 : 4 (C) 2 : 1 (D) 1 : 2
12. 2 nr.kp Mukss xU Nfhsj j pd; ti sgugG
 (A) 8π nr.kp (B) 16 nr.kp (C) 12π nr.kp (D) 16π nr.kp
13. xU j pz k mi uf; Nfhsj j pd; tll k; 2 nr.kp vdy; mj d; nkj j Gwg; gugG
 (A) 12 nr.kp (B) 12π nr.kp (C) 4π nr.kp (D) 3π nr.kp

14. $\frac{9}{16}\pi$ f.nr.k^l fd msT nfhz l Nfhsj j pd; Muk;
 (A) $\frac{4}{3}\pi$ nr.k^l (B) $\frac{3}{4}\pi$ nr.k^l (C) $\frac{3}{2}\pi$ nr.k^l (D) $\frac{2}{3}\pi$ nr.k^l
15. , uz L Nfhsqfsj pd; ti sgugGfsj pd; tpfij k; 9 : 25. mtwwj pd; fd msTfsj pd; tpfij k;
 (A) 81 : 625 (B) 729 : 15625 (C) 27 : 75 (D) 27 : 125
16. a myFfs; Muk; nfhz l j p k mi uf; Nfhsj j pd; nkhj j g; GwggugG
 (A) $2\pi a^2 r.m$ (B) $3\pi a^2 r.m$ (C) $3\pi a r.m$ (D) $3a^2 r.m$
17. 100π r.nr.k^l ti sgugG nfhz l Nfhsj j pd; Muk;
 (A) 25π nr.k^l (B) 100π nr.k^l (C) 5π nr.k^l (D) 10π nr.k^l
18. xU Nfhsj j pd; ti sgugG 36π r.nr.k^l vdjy> mj d; fd msT
 (A) 12π nr.k^l (B) 36π nr.k^l (C) 72π nr.k^l (D) 108π nr.k^l
19. 12π nr.k^l nkhj j ggugG nfhz l j p k mi uf; Nfhsj j pd; ti sgugG
 (A) 6π nr.k^l (B) 24π nr.k^l (C) 36π nr.k^l (D) 8π nr.k^l
20. xU Nfhsj j pd; MukhdJ kwnwhU Nfhsj j pd; Muj j py; ghj p vdjy; mtwwj pd; fd msTfsj pd; tpfij k;
 (A) 1 : 8 (B) 2 : 1 (C) 1 : 2 (D) 8 : 1
21. xU j p k Nfhsj j pd; ti sgugG 24π nr.k^l. mej Nfhsj j j , uz L mi uf; Nfhsqfshfg; ghj j hy;
 fji l fFk; mi uf; Nfhsqfshfg; xdwj pd; nkhj j g; GwggugG
 (A) 12π nr.k^l (B) 8π nr.k^l (C) 16π nr.k^l (D) 18π nr.k^l
22. , uz L \$kGfs; rk Muqfs; nfhz l ssd. NKYk; mtwwj pd; rhAauqfsj pd; tpfij k; 4 : 3 vdjy>
 ti sgugGfsj pd; tpfij k;
 (A) 16 : 9 (B) 8 : 6 (C) 4 : 3 (D) 3 : 4

11. Gsspaj;

xU kj jggz ; tpdhffs;

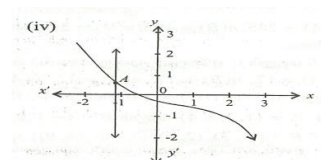
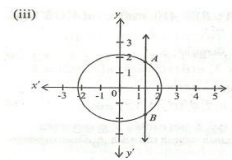
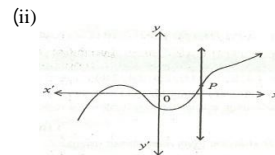
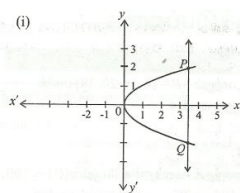
1. 2:3:5:7:11:13:17:19:23:29 vdjw Kj y; gj J gfh vz fsj pd; tR
 (A) 28 (B) 26 (C) 29 (D) 27
2. nj hFggjYss tptuqfsj py; kpfrrmpja kj jgg 14.1 kwWk; mt; tptuj j pd; tR 28.4 vdjy> nj hFggj pd; kpf; g;
 nghja kj jgg (A) 42.5 (B) 43.5 (C) 42.4 (D) 42.1
3. nj hFggjYss tptuqfsj py; kpfngghja kj jgg 72 kwWk; kpfrrmpja kj jgg 28 vdjy> mj nj hFggj pd; tR f;
 nFO (A) 44 (B) 0.72 (C) 0.44 (D) 0.28
4. 11 kj jggfsj pd; $\sum x = 132$ vdjy> mtwwj pd; \$l Lr; ruhrhp
 (A) 11 (B) 12 (C) 14 (D) 13
5. n c WgGfs; nfhz l vej xU vz fsj pd; nj hFggjYFk; $\sum(x-\bar{x}) =$
 (A) $\sum x$ (B) \bar{x} (C) $n\bar{x}$ (D) 0
6. n c WgGfs; nfhz l vej xU vz fsj pd; nj hFggjYFk; $(\sum x) - \bar{x} =$
 (A) $n\bar{x}$ (B) $(n-2)\bar{x}$ (C) $(n-1)\bar{x}$ (D) 0
7. x, y, z - d; j pl l tpyffk; t- vdjy> $x+5, y+5, z+5 - d; j pl l tpyffk;$
 (A) $\frac{t}{3}$ (B) $t+5$ (C) t (D) xyz
8. xU Gssj tptuj j pd; j pl l tpyffk; 1.6 vdjy> mj d; tpyff thffr; ruhrhp
 (A) 0.4 (B) 2.56 (C) 1.96 (D) 0.04
9. xU Gssj tptuj j pd; tpyff thff ruhrhp 12.25 vdjy> mj d; j pl l tpyffk;
(A) 3.5 (B) 3 (C) 2.5 (D) 3.25
10. Kj y; 11 , ay; vz fsj pd; tpyff thffr; ruhrhp
 (A) $\sqrt{5}$ (B) $\sqrt{10}$ (C) $5\sqrt{2}$ (D) 10
11. 10,10,10,10,10 - d; tpyff thff ruhrhp
 (A) 10 (B) $\sqrt{10}$ (C) 5 (D) 0
12. 14,18,22,26,30 - d; tpyff thffr; ruhrhp 32 vdjy; 28,36,44,52,60 - d; tpyff thffr; ruhrhp
 (A) 64 (B) 128 (C) $32\sqrt{2}$ (D) 32
13. tptuqfsj pd; nj hFgg xdwj pd; j pl l tpyffk; $2\sqrt{2}$. mj jYss xtntu kj jggk; 3 My; ngUff fji l fFk;
 Gj ja tptuj ; nj hFggj pd; j pl l tpyffk;
 (A) $\sqrt{12}$ (B) $4\sqrt{2}$ (C) $6\sqrt{2}$ (D) $9\sqrt{2}$
14. $\sum(x-\bar{x})^2 = 48, \bar{x} = 20$ kwWk; n = 12 vdjy> khWghl LfnFO
 (A) 25 (B) 20 (C) 30 (D) 10
15. rjy tptuqfsj pd; \$l Lr; ruhrhp kwWk; j pl l tpyffk; Ki wNa 48> 12 vdjy> khWghl LfnFO
 (A) 42 (B) 25 (C) 28 (D) 48

**12. efoj fT
xU kj igngz ; tpdhffs;**

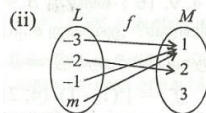
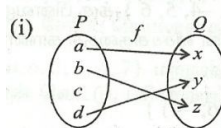
1. \emptyset vdgJ xU , ayh eforrp vdy> $P(\emptyset) =$
(A) 1 (B) $\frac{1}{4}$ (C) 0 (D) $\frac{1}{2}$
2. S vdgJ xU rkthagG Nrhj i dapt; \$Wnts p vdy> $P(S) =$
(A) 0 (B) $\frac{1}{8}$ (C) $\frac{1}{2}$ (D) 1
3. A vdw eforrpapt; efoj fT p vdy> gdtUt dtwmp; p vi j epi wT nraAk;
(A) $0 < p < 1$ (B) $0 \leq p \leq 1$ (C) $0 \leq p < 1$ (D) $0 < p \leq 1$
4. A kwWk; B vdgJ Vnj Dk; , U eforrpf; NkYk; S vdgJ rkthagGr; Nrhj i dapt; \$Wnts p vdy>
 $P(\bar{A} \cap B) =$
(A) $P(B) - P(A \cap B)$ (B) $P(A \cap B) - P(B)$ (C) $P(S)$ (D) $P[(A \cup B)']$
5. xU khz td; fz ij j j y; 100 kj igngz ; ngWtj wfhd efoj fT $\frac{4}{5}$ mth; 100 kj igngz ; ngwhky;
, Uggj wfhd efoj fT
(A) $\frac{1}{5}$ (B) $\frac{2}{5}$ (C) $\frac{3}{5}$ (D) $\frac{4}{5}$
6. A kwWk; B vdw , U eforrpf; $P(A) = 0.25$, $P(B) = 0.05$ kwWk; $P(A \cap B) = 0.14$ vdy> $P(A \cup B) =$
(A) 0.61 (B) 0.16 (C) 0.14 (D) 0.6
7. 20 nghU f; 6 nghU f; Fi wghLi l ai t. RkthagG Ki way; xU nghUs; Nj henj LfFk; NghJ mJ
Fi wawwj hff; fji lggj wfhd efoj fT
(A) $\frac{7}{10}$ (B) 0 (C) $\frac{3}{10}$ (D) $\frac{2}{3}$
8. A kwWk; B vdgJ , uz l xdi wnahdW tyfFk; eforrpf; vdf. meeforrpapt; \$Wnts p S>
 $P(A) = \frac{1}{3}P(B)$ kwWk; $S = A \cup B$ vdy> $P(A) =$
(A) $\frac{1}{4}$ (B) $\frac{1}{2}$ (C) $\frac{3}{4}$ (D) $\frac{3}{8}$
9. A, B kwWk; C vdgJ xdi wnahdW tyfFk; %dW eforrpf; vdf. mtwmp; efoj fTfs; Ki wNa
 $\frac{1}{3}$, $\frac{1}{4}$ kwWk; $\frac{5}{12}$ vdy> $P(A \cup B \cup C) =$
(A) $\frac{19}{12}$ (B) $\frac{11}{12}$ (C) $\frac{7}{12}$ (D) 1
10. $P(A) = 0.25$, $P(B) = 0.50$ kwWk; $P(A \cap B) = 0.14$ vdy> $P(A \text{ Ak; myy } B \text{ Ak; myy}) =$
(A) 0.39 (B) 0.25 (C) 0.11 (D) 0.24
11. xU i gay; 5 fUgG 4 ntsi s kwWk; 3 rptgG epwg; geJ fs; c ssd. rkthagG Ki way;
Nj henj LfFggLk; xU geJ rptgG epwkf , yyhky; , Uggj wfhd efoj fT>
(A) $\frac{5}{12}$ (B) $\frac{4}{12}$ (C) $\frac{3}{12}$ (D) $\frac{3}{4}$
12. xNu Neuj j y; , U gfi l fs; C UI l ggLf; dwd. gfi l apt; , uz l Kf; qf; s; Yk; xNu vz z hf , Uff
efoj fT (A) $\frac{1}{36}$ (B) $\frac{1}{3}$ (C) $\frac{1}{6}$ (D) $\frac{2}{3}$
13. xU rthd gfi l xU Ki w c UI l ggLk; NghJ fji l fFk; gfh vz ; myyJ gF vz z hf , Uggj wfhd
efoj fT> (A) 1 (B) 0 (C) $\frac{5}{6}$ (D) $\frac{1}{6}$
14. xU ehz aj j %dW Ki w Rz Lk; Nrhj i dapt; 3 j i yfs; myyJ 3 Gffs; fji l ff efoj fT>
(A) $\frac{1}{8}$ (B) $\frac{1}{4}$ (C) $\frac{3}{8}$ (D) $\frac{1}{2}$
15. 52 rll fs; nfhz l xU rll f; fl byDeJ xU rll vLfFk; NghJ mJ xU V] ; Mf , yyhky; kwWk;
xU , uhrthf , yyhky; Uggj wfhd efoj fT>
(A) $\frac{2}{13}$ (B) $\frac{11}{13}$ (C) $\frac{4}{13}$ (D) $\frac{8}{13}$
16. xU nel l hz by; 53 ntss; f; fpi kfs; myyJ 53 rd; f; fpi kfs; tUtj wfhd efoj fT
(A) $\frac{2}{7}$ (B) $\frac{1}{7}$ (C) $\frac{4}{7}$ (D) $\frac{3}{7}$
17. xU rhj huz tUI khDJ 53 QhapWf; fpi kfs; kwWk; 53 j q; fl; fpi kfs; nfhz bUggj wfhd efoj fT
(A) $\frac{1}{7}$ (B) $\frac{2}{7}$ (C) $\frac{3}{7}$ (D) 0
18. 52 rll fs; nfhz l xU rll f; fl byDeJ xU rll vLfFk; NghJ mJ hhl; murpahf , Uggj wfhd
efoj fT> (A) $\frac{1}{52}$ (B) $\frac{16}{52}$ (C) $\frac{1}{13}$ (D) $\frac{1}{26}$
19. xU cWj pahd eforrpapt; efoj fT
(A) 1 (B) 0 (C) 100 (D) 0.1
20. xU rkthagG Nrhj i dapt; KbthdJ ntwwpahfNth myyJ Nj hy; t; pahfNth , Uffk; mrNrhj i dapt;
ntwwp ngWtj wfhd efoj fT Nj hy; t; f; fhhd efoj fT i dg; Nghy; , U Kl qF vdy> ntwwp ngWtj wfhd
efoj fT (A) $\frac{1}{3}$ (B) $\frac{2}{3}$ (C) 1 (D) 0

3. fz qfS k; rhhGfS k; , U kj pngz ; tpdhffs;

- $A = \{4,6,7,8,9\}$, $B = \{2,4,6\}$, $C = \{1,2,3,4,5,6\}$ vdiy; $A \cap (B \cup C)$ fhz f?
- $A = \{4,6,7,8,9\}$, $B = \{2,4,6\}$, $C = \{1,2,3,4,5,6\}$ vdiy; $A \cup (B \cap C)$ fhz f?
- $A = \{10,15,20,25,30,35,40,45,50\}$, $B = \{1,5,10,15,20,30\}$ kwWk; $C = \{7,8,15,20,35,45,48\}$ vdiy; $A \setminus (B \cap C)$ fhz f?
- $A = \{4,6,7,8,9\}$, $B = \{2,4,6\}$, $C = \{1,2,3,4,5,6\}$ vdiy; $A \setminus (C \setminus B)$ fhz f?
- $P = \{a, b, c\}$, $Q = \{g, h, x, y\}$, $R = \{a, e, f, s\}$ vdiy; (i) $P \setminus R$ (ii) $Q \cap R$ (iii) $R \setminus (P \cap Q)$ I fhz f?
- , U fz qfspd; NrugG khwW gz Gi laJ vd ntdgl k; %yk; ep&gp
- , U fz qfspd; ntlL khwW gz Gi laJ vd ntdgl k; %yk; ep&gp
- $A = \{a, x, y, r, s\}$, $B = \{1, 3, 5, 7, -10\}$ Mfpa , U fz qfspd; NrugG kwWk; gupkhwW gz Gi laJ vdgij rugghuffTk;
- $A = \{1, m, n, o, 2, 3, 4, 7\}$, $B = \{2, 5, 3, -2, m, n, o, p\}$ Mfpa , U fz qfspd; ntlL gupkhwW gz Gi laJ vdgij rugghuffTk;
- $U = \{4, 8, 12, 16, 20, 24, 28\}$, $A = \{8, 16, 24\}$, $B = \{4, 16, 20, 28\}$ vdiy; $(A \cup B)^c$ kwWk; $(A \cap B)^c$ I f; fhz f?
- $A \subset B$ vdiy; $A \cup B = B$ vdf; fhllf.
- $A \subset B$ vdiy; $A \cap B$ kwWk; $A \setminus B$ Mfpatwi w fhz f.
- $A \cap (B \setminus C)$ d; ntd; gl k; ti uf
- $(B \cup C) \setminus A$ d; ntd; gl k; ti uf
- $A \cap (B \setminus C)$ d; ntd; gl k; ti uf
- $A \cup (B \cap C)$ d; ntd; gl k; ti uf
- $C \cap (B \cup A)$ d; ntd; gl k; ti uf
- $A \setminus (B \cap C)$ d; ntd; gl k; ti uf.
- $R = \{(1,3), (2,6), (3,10), (4,9)\}$ vdgJ xU rhughFkh? rhuG vdiy; kj pggfk> Ji z kj pggfk>ttrfk; fhz f.
- XdWfnhdwhd rhuG Nky; rhuG Mfpatwi w ti uaW.
- khwprrhuG kwWk; rkdprrhugpi d ti uaW.
- $A = \{1, 2, 3, 4, 5\}$, $B = N$ kwWk; $f: A \rightarrow B$ MdJ $f(x) = x^2$ vd ti uaWffggllssJ. f d; ttrfj j pi d fhz f. NkYk; rhugpd; ti fi af; fhz f.
- $X = \{1, 2, 3, 4, 5\}$, $Y = \{1, 3, 5, 7, 9\}$ vdf. X yUJeJ Y ffhd c wT $\{(1,1), (1,3), (3,5), (3,7), (5,7)\}$ vd ti uaWggpd; mJ rhhG MFkh vd Muhaf. , yi y vdiy> fhuz k; \$W.
- $X = \{1, 2, 3, 4\}$ vdf. $g = \{(3,1), (4,2), (2,1)\}$ vdw c wT $X - yUJeJ X - fF$ xU rhughFkh vd Muhaf. c d; tpi l fF Vww tpsffk; j Uf.
- nfhLffggllss $F = \{(1,3), (2,5), (4,7), (5,9), (3,1)\}$ vDk; rhugwF kj pggfk>ttrfk; Mfpatwi wf; fhz f.
- A, B , U fz qfs; NkYk; U vdgJ mi dj J fz k; vdf. NkYk; $n(U) = 700$, $n(A) = 200$, $n(B) = 300$, $n(A \cap B) = 100$, $n(A^c \cap B^c)$ I f; fhz f
- $n(U) = 500$, $n(A) = 285$, $n(B) = 195$, $n(A \cup B) = 410$, $n(A^c \cup B^c)$ I f; fhz f
- $A = \{4, 5, 6\}$, $B = \{5, 6, 7, 8\}$, $C = \{6, 7, 8, 9\}$ vdiy;
 $n(A \cup B \cup C) = n(A) + n(B) + n(C) - n(A \cap B) - n(B \cap C) - n(A \cap C) + n(A \cap B \cap C)$ vdgij rugghu;
- nfhLffggllss rhuG $f = \{(-1,2), (-3,1), (-5,6), (-4,3)\}$ I i) ml l ti z ii) mkGfFwpg; gl k; Mfpatwppd; %yk; Fwppf.
- Fj J fNfhL Nrhji di ag; gadglj j p gpdTuk; ti ugl qfsiy; vi t rhhgpi df; Fwppf; Fk; vdgj ; j rhkhdppf; fTk;



- gpdTuk; mkGfFwpgl qfs; rhhj gf; Fwppf; pdwdth vdf; \$W. c d; tpi l fFj ; j Fej fhuz k; \$W.



I eJ kj gngz ; tpdhffs;

1. ntdgl qfi sg; gadgLj j p $A \setminus (B \cup C) = (A \setminus B) \cap (A \setminus C)$ vd;Dk; B khhf d pd; fz tjj j pahr tjj pi a rhghh;
2. ntdgl qfi sg; gadgLj j p $A \setminus (B \cap C) = (A \setminus B) \cup (A \setminus C)$ vd;Dk; B khhf d pd; fz tjj j pahr tjj pi a rhghh;
3. ntdgl qfi sg; gadgLj j p $(A \cup B)' = A' \cap B'$ vd;Dk; fz epuggpffhd B khhf d pd; tjj pi a rhghh;
4. ntdgl qfi sg; gadgLj j p $(A \cap B)' = A' \cup B'$ vd;Dk; fz epuggpffhd B khhf d pd; tjj pi a rhghh;
5. ntdgl qfi sg; gadgLj j p $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$ vdw gqfll L gz gpi d rhghh;
6. ntdgl qfi sg; gadgLj j p $A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$ vdw gqfll L gz gpi d rhghh;
7. $A = \{a, b, c, d\}$ $B = \{a, c, e\}$ $C = \{a, e\}$ vdpy; $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$ vdf; fhl L.
8. $A = \{0, 1, 2, 3, 4\}$ $B = \{1, -2, 3, 4, 5, 6\}$ $C = \{2, 4, 6, 7\}$ vdpy; $A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$ vdf; fhl L.
9. $A = \{1, 3, 5, 7, 9, 11, 13, 15\}$ $B = \{1, 2, 5, 7\}$ $C = \{3, 9, 10, 12, 13\}$ vdpy; B khhf d pd; fz tjj j pahr tjj pi s rhghh;
10. $A = \{a, b, c, d, e, f, g, x, y, z\}$ $B = \{1, 2, c, d, e\}$ $C = \{d, e, f, g, 2, y\}$ vdpy; B khhf d pd; fz tjj j pahr tjj pi s rhghh;
11. $A = \{x / -3 \leq x < 4, x \in \mathbb{R}\}$, $B = \{x / x < 5, x \in \mathbb{N}\}$, $C = \{-5, -3, -1, 0, 1, 3\}$ vdpy; $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$ vdf; fhl L.
12. $U = \{a, b, c, d, e, f, g, h\}$ $A = \{a, b, f, g\}$ $B = \{a, b, c\}$ vdpy; B khhf d pd; fz epugg tjj pi s rhghh;
13. $U = \{5, 6, 7, 8, 9, 10, 11, 12, 13\}$ $A = \{5, 8, 10, 11\}$ $B = \{5, 6, 7, 9, 10\}$ vdpy; B khhf d pd; fz epugg tjj pi s rhghh;
14. $U = \{4, 8, 12, 16, 20, 24, 28\}$, $A = \{8, 16, 24\}$, $B = \{4, 16, 20, 28\}$ vdpy; B khhf d pd; fz epugg tjj pi s rhghh;
15. $A = \{5, 10, 15, 20\}$, $B = \{6, 10, 12, 18, 24\}$, $C = \{7, 10, 12, 14, 21, 28\}$ vdpy; $A \setminus (B \cap C) = (A \setminus B) \cap C$ vdgJ nkaahFkh vd Muhaf. c d; tpi l f; f j f f fhuz k; \$Wf.
16. xU efuj j py; 85% Ngh; j k p; nkhop 40% Ngh; Mqfpy nkhop kwWk; 20% Ngh; , ej p nkhop NgRf pwhhfs; 32% Ngh; j k p; Mqfpy k k; 13% Ngh; j k p; , ej p k; kwWk; 10% Ngh; Mqfpy k k; , ej p k; NgRf pwhhfs; vdpy; %dW nkhopi sAk; Ngrj; nj h e j thf s pd; rj tjj j pi d fhz f.
17. xU FOt py; 65 khz tuf s; fhygej hl j k k; 45 Ngu; ` h f; f p k; 42 Ngu; f p p f n f l l k; kwWk; 20 Ngu; fhygej hl j k k; ` h f; f p k; 25 Ngu; fhygej hl j k k; f p p f n f l l k; 15 Ngu; ` h f; f p k; f p p f n f l l k; tpi sahL f p whu f s; 8 Ngu; %dW tpi sahL f i sAk; tpi sahL f p whu f s; vdpy; m f FOt py; c s s khz tuf s pd; v z z p f i f i a fhz f.
18. gyfi yffof khz thf s pd; fz f n f l g g py; 64 Ngh; fz ij k; 94 Ngh; fz igng h w p m w p t p a y; 58 Ngh; , awg p a y; M f p a g h l q f i s f; f w f p d w d h; 28 Ngh; fz ij k k; , awg p a Y k; 26 Ngh; fz ij k k; fz igng h w p m w p t p a Y k; 22 Ngh; fz igng h w p m w p t p a Y k; , awg p a Y k; kwWk; 14 Ngh; %dW g h l q f i s A k; f w f p d w d h; fz f n f l g g py; f y e j f n f h z j khz thf s pd; v z z p f i f i a f; fhz f. N k Y k; xU g h l j j k l l k; f w f p d w khz thf s pd; v z z p f i f i a f; fhz f.
19. xU thndhy p epi yak; 190 khz tuf s; k; m tuf s; t p U k G k; , i r a p d; t i f f i s j; j l k h d p f f xU fz f n f l g g e l j j p a j. 114 Ngu; N k w f j j p a , i r i a A k; 50 Ngu; f p u h k p a , i r i a A k; 41 Ngu; f u e h l f , i r i a A k; 14 Ngu; N k w f j j p a , i r i a A k; f p u h k p a , i r i a A k; 15 Ngu; N k w f j j p a , i r i a A k; f u e h l f , i r i a A k; 11 Ngu; f u e h l f , i r i a A k; f p u h k p a , i r i a A k; 5 Ngu; %dW , i r f i s A k; t p U k G f p d w d u; vdpy; g p d t U t d t w i w fhz f.
 - i.) %dW t i f , i r f i s A k; t p U k g h j khz tuf s; v z z p f i f
 - ii.) , U t i f , i r f i s k l l k; t p U k G k; khz tuf s pd; v z z p f i f
 - iii.) f p u h k p a , i r i a t p U k g p N k w f j j p a , i r i a t p U k g h j khz tuf s pd; v z z p f i f
20. xU f y; Y u p a y; N r U t j w F 60 khz tuf s; N t j p a p a Y k; 40 Ngu; , awg p a y p Y k; kwWk; 30 Ngu; c a p p a p a Y k g j p T n r a j s s d u; 15 Ngu; N t j p a p a Y k; , awg p a y p Y k; 5 Ngu; c a p p a p a Y k; N t j p a p a Y k; 10 Ngu; , awg a y p Y k; c a p p a p a Y k; g j p T n r a j s s d u; %dW g h l q f s p Y k; xU t U N k g j p T n r a a t p y i y vdpy; xU g h l j j w F k l l k; g j p T n r a j s s khz tuf s pd; v z z p f i f i a fhz f.

21. 170 thbfj fahsufsy; 115 Ngu; nj hi yffhl rp aAk> 110 Ngu; thndhyi aAk> 130 Ngu; gjj pufi ffi sAk; gadgLj ; J ffdwdu; 85 Ngu; nj hi yffhl rp kwWk; gjj pufi fi aAk> 75 Ngu; nj hi yffhl rp kwWk; thndhyi aAk; > 95 Ngu; thndhyi kwWk; gjj pufi fi aAk> 70 Ngu; %dwi dAk; gadgLj ; J ffdwdu; vdy> ntdglj j y; tptuqfi sf; Fwjj ; J gpd;Ut dtwi w fhz f.
- thndhyi kl Lk; gadgLj ; J Nthu; vz z pfi f >
 - nj hi yffhl rp kl Lk; gadgLj ; J Nthu; vz z pfi f >
 - nj hi yffhl rp kwWk; gjj pufi fi a gadgLj j p thndhyi a gadgLj j hNj hu; vz z pfi f
22. 4000 khz tufs; gapYk; xU gsspary; 2000 NgUfF gnuQR> 3000 NgUfF j kpo; kwWk; 500 NgUfF , ej pAk; nj upAk; NKYk> 1500 NgUfF gnuQR kwWk; j kpo> 300 NgUfF gnuQR kwWk; , ej p 200 NgUfF j kpo; kwWk; , ej p 50 NgUfF , k%dW nkhofS k; nj upAk; vdy; gpd;Ut dtwi wf; fhz f.
- %dW nkhofS k; nj upahj tufspd; vz z pfi f >
 - VNj Dk; xU nkhofhtJ nj upaj tufs; vz z pfi f >
 - U nkhofS; kl Lk nj upaj tufs; vz z pfi f
23. 120 FLkgqfs; css xU fuhkj j y; 93 FLkgqfs; ri kay; nrattj wF twi fg; gadgLj ; J ffdwdu; 63 FLkgqfs; kz nz z i z i a gadgLj ; J ffdwdu; 45 FLkgqfs; ri kay; vupthA tg; gadgLj ; J ffdwdu; 45 FLkgqfs; twF kwWk; kz nz z i z > 24 FLkgqfs; kz nz z i z kwWk; vupthA > 27 FLkgqfs; vupthA kwWk; twF Mfjawi w gadgLj ; J ffdwdu; %dwi dAk; gadgLj ; J k; FLkgqfs pd; vz z pfi fi af; fhz f.
24. $A = \{0,1,2,3\}$ $B = \{1,3,5,7,9\}$ vdg d , U fz qfs; vdf. f: $A \rightarrow B$ vdDk; rhhG $f(x) : 2x+1$ vdf; nfhLf;fggl LssJ. , rhhgpi d (i) thpi rr; Nrhbfs pd; fz k; (ii) ml j ti z (iii) mkGf;Fwgg; gl k; (iv) ti ugl k; Mfjatwwhy; Fwppf.
25. $A = \{4,6,8,10\}$ $B = \{3,4,5,6,7\}$ vdg d , U fz qfs; vdf. f: $A \rightarrow B$ vdDk; rhhG $f(x) : \frac{1}{2}x+1$ vdf; ti uaWf;fggl LssJ. rhhG f - I (i) thpi r Nrhbfs pd; fz k; (ii) ml j ti z (iii) mkGf;Fwgg; gl k; (iv) ti ugl k; Mfjatwwhy; Fwppf.
26. $A = \{5,6,7,8\}$ $B = \{-11,4,7, -10, -7, -9, -13\}$ vdg d , U fz qfs; vdf. f: $\{(x,y) : y = 3-2x, x \in A, y \in B\}$ vd ti uaWf;fggl LssJ. (i) f - d; c WgGfi s vOJ f. (ii) mj d; Ji z kj jggfk; fhz f. (iii) tlr fk; fhz f. (iv) vtti fr; rhhG vdf; fhz f.
27. $A = \{6,9,15,18,21\}$ $B = \{1,2,4,5,6\}$ vdg d , U fz qfs; vdf. f: $A \rightarrow B$ vdDk; rhhG $f(x) : \frac{x-3}{3}$ vd ti uaWf;fggl LssJ. rhhG f - I (i) thpi r Nrhbfs pd; fz k; (ii) ml j ti z (iii) mkGf;Fwgg; gl k; (iv) ti ugl k; Mfjatwwhy; Fwppf.
28. rhhG $f : [-3,7) \rightarrow \mathbb{R}$ fb;fz j thW ti uaWf;fggl LssJ. $f(x) = \begin{cases} 4x^2 - 1; & -3 \leq x < 2 \\ 3x - 2; & 2 \leq x \leq 4 \\ 2x - 3; & 4 < x < 7 \end{cases}$ gpd;Ut dtwi wf; fhz f. (i) $f(5)+f(6)$ (ii) $f(1) - f(-3)$ (iii) $f(-2) - f(4)$ (iv) $\frac{f(3)+f(-1)}{2f(6)-f(1)}$
29. rhhG $f : [1,6) \rightarrow \mathbb{R}$ fb;fz j thW ti uaWf;fggl LssJ. $f(x) = \begin{cases} 3x^2 - 10; & 4 \leq x < 6 \\ 2x - 1; & 2 \leq x < 4 \\ 1 + x; & 1 \leq x < 2 \end{cases}$ gpd;Ut dtwi wf; fdz f. (i) $f(5)$ (ii) $f(3)$ (iii) $f(1)$ (iv) $f(2) - f(4)$ (v) $2f(5) - 3f(1)$
30. rhhG $f : [-7,6) \rightarrow \mathbb{R}$ fb;fz j thW ti uaWf;fggl LssJ. $f(x) = \begin{cases} x^2 + 2x + 1; & -7 \leq x < -5 \\ x + 5; & -5 \leq x \leq 2 \\ x - 1; & 2 < x < 6 \end{cases}$ gpd;Ut dtwi wf; fhz f. (i) $2f(-4)+3f(2)$ (ii) $f(-7) - f(-3)$ (iii) $\frac{4f(-3)+2f(4)}{f(-6)-3f(1)}$

2. nkanaz fspd; nj hl hthpi rfSk; nj hl hfSk;

, uz L kj gngz ; tpdhffs;

1. n-tJ c WgG nfhLf fggL Lss $C_n = \frac{n(n+1)(2n+1)}{6}$ vdw nj hl u; tupi rapd; Kj y; %dW c WgGfi sf; fhz f.
2. $F_1 = F_2 = 1$ kwWk; $F_n = F_{n-1} + F_{n-2}$, n=3, 4 vdp; nj hl hthpi rapd; Kj y; l eJ c WgGfi sf; fhz f
3. xU GeNj hl l j j py; Kj y; tupi rapy; 23 Nuh[hr; nrbfs> , uz l hk; tupi rapy; 21 Nuh[hr; nrbfs> %dwhk; tupi rapy; 19Nuh[hr; nrbfs; vdw Ki wapy; Nuh[hr; nrbfs; xU nj hl u; tupi rmi kggpy; c ssd.fi l rp tupi rapy; 5Nuh[hr; nrbfs; , Uggpd> mgGeNj hl l j j py; vj j i d tupi rfsc ssd.
4. 2010 y; xUtU; Mz L Cj pak; &.30,000 vd gz papy; NrUf pwhu; NkYk; xtntH U tUl Kk; &.600 l Mz L Cj pa caurthf ngWf pwhu; mtUi l a Mz L Cj pak; vej Mz by; &.39,000 Mf , UfFk;
5. 125,120,115,110...vdw \$l Lj ; nj hl u; tupi rapd; nghJ t j j pahrk; kwWk; 15- tJ c Wgi g fhz f?
6. $\sqrt{2}, 3\sqrt{2}, 5\sqrt{2}, \dots$ vdw \$l Lj nj hl upy; 12-tJ c WgG fhz f?
7. 4,9,14,.....vdw \$l Lj nj hl upy; 17-tJ c WgG fhz f?
8. $24, 23\frac{1}{4}, 22\frac{1}{2}, 21\frac{3}{4}, \dots$ vdw \$l Lj nj hl upy; 3 vj j i dahtJ c WgG?
9. 7,13,19,.....25 vdw \$l Lj nj hl upy; vj j i d c WgGfs; c ssd?
10. xU \$l Lj nj hl hthpi rapd; 9 tJ Gf l j pak; vdp; 19 tJ c Wggpd; , U kl qF 29 tJ c WgG vd epUg?
11. Vz ; 13 My; tFgLk; <hpyff kpi f KO vz fspd; vz z pfi fi af; fhz f.
12. xU \$l Lj nj hl upy; $t_{10}=41, t_{18}=73$ vdp; 27 tJ c WgG fhz f?
13. 1,7,13,19,...kwWk; 100,95,90,...Mfpa \$l Lj nj hl u; tupi rfs pd; n-tJ c WgGfs; rkk; vdp; n-d; kj gg ahJ.
14. %dW vz fspd; tpfij k; 2:5:7 vdf. Kj yhk; vz > , uz l hk; vz z pypJeJ 7 l foj j g; ngwggLk; vz ; kwWk; %dwhTJ vz ; Mf pad xU \$l Lj nj hl i u Vwgl j j pdhy; mtntz .fi s fhz ;
15. $\frac{1}{4}, -\frac{1}{2}, 1, -2, \dots$ vdw ngUfFj ; nj hl h; thpi rapd; 10 tJ c Wgi gAk; nghJ c Wgi gAk; fhz f?
16. $\frac{2}{5}, \frac{6}{25}, \frac{18}{125}, \dots$ vdw ngUfFj nj hl upd; nghJ tpfij k; kwWk; nghJ c Wgi gf; fhz f?.
17. xU ngUfFj ; nj hl hthpi rapy; 4-tJ kwWk; 7-tJ c WgGfs; Ki wNa 54 kwWk;1458 vdp; mj nj hl u; tupi ri af; fhz f?
18. xU ngUfFj nj hl upy; Kj y; kwWk; MwhtJ c WgGfs; Ki wNa 1/3 kwWk;1/729 vdp; mj nj hl u; tupi ri af; fhz f?
19. $5, 2, 4/5, 8/25, \dots$ vdw ngUfFj nj hl upy; 128/15625 vj j i dahtJ c WgG?
20. 1,2,4,8,.....1024 vdw ngUfFj nj hl upy; vj j i d c WgGfs; c ssd?
21. xU Ez Z ap; guNrhj i dapy; xtntH U kz p NeuKk; ghfBupahf fspd; vz z pfi f , ul bgghf pWJ. guNrhj i dard; nj hl ffj j py; 30 ghfBupahf fs; , Uej d. 14 tJ kz p Neu Kbt py; c ss ghfBupahf fspd; vz z pfi fi af; fhz f.
22. xU ngUfFj nj hl u; tupi rapy; Kj y; %dW c WgGfspd; \$Lj y; 13 kwWk; mtwmpd; tuffq; fspd; \$Lj y; 91 vdp; mj nj hl u; tupi ri af; fhz f
23. $5+11+17+\dots+95$ vdw \$l Lj nj hl upd; \$Lj y; fhz f
24. xU \$l Lj ; nj hl upy; Kj y; 14 c WgGfspd; \$Lj y; -203 kwWk; mLj j 11 c WgGfspd; \$Lj y; -572 vdp; mj nj hl i uf; fhz f.
25. xU \$l Lj ; nj hl upy; Kj y; 11 c WgGfspd; \$Lj y; 44 kwWk; mLj j 11 c WgGfspd; \$Lj y; 55 vdp; mj nj hl i uf; fhz f.
26. $24+21+18+15+\dots$ vdw \$l Lj nj hl upy; nj hl urrpahf vj j i d c WgGfi s \$l bdhy; \$Lj y; -351 fpi l fFk?
27. 60,56,52,48,..... vdw \$l Lj ; nj hl hthpi rapd; Kj y; c WggypJeJ nj hl urrpahf vj j i d c WgGfi sf; \$l bdhy; \$Lj y; 368 fpi l fFk?
28. $16 - 48 + 144 - 432 + \dots$ vdw ngUfFj nj hl upy; c ss Kj y; 25 c WgGfspd; \$Lj y; fhz f
29. $5/2+5/6+5/18+\dots$ vdw ngUfFj nj hl upy; c ss Kj y; 20 c WgGfspd; \$Lj y; fhz f
30. $2+4+8+\dots$ vdw ngUfFj nj hl upy; Kj y; c WggypJeJ nj hl urrpahf vj j i d c WgGfi s \$l bdhy; \$Lj y; 1022 fpi l fFk?
31. $3+9+27+\dots$ vdw ngUfFj nj hl upy; nj hl urrpahf vj j i d c WgGfi sf; \$l bdhy; \$Lj y; 1022 fpi l fFk?
32. nghJ tpfij k; kpi f vz z hf , UfFk; xU ngUfFj nj hl upy; 4 c WgGfs; c ssd. Kj y; , uz L c WgGfspd; \$Lj y; 8 kwWk; mj d; fi l rp , uz L c Wggfspd; \$Lj y; 72 vdp; mj nj hl i uf; fhz f.
33. $1+11+111+\dots$ vdw KbTW nj hl upy; 20 c WgGfs; ti u \$Lj y; fhz f.
34. $1+6+11+16+\dots+x=148$ vdp; x d; kj ggi gf; fhz f.
35. $1+2+3+\dots+45$ vdw nj hl upd; \$Lj y; fhz f?
36. $26+27+28+\dots+60$ vdw nj hl upd; \$Lj y; fhz f?

37. $2+4+6+\dots+100$ vdw nj hl upd; \$Lj y; fhz f?
38. $1+3+5+\dots+25$ c WgGfs; ti u \$Lj y; fhz f?
39. $31+33+\dots+53$ vdw nj hl upd; \$Lj y; fhz f?
40. $1^2+2^2+3^2+\dots+25^2$ vdw nj hl upd; \$Lj y; fhz f?
41. $1^2+3^2+5^2+\dots+51^2$ vdw nj hl upd; \$Lj y; fhz f?
42. $1^3+2^3+3^3+\dots+20^3$ -d; kj igG fhz f? (myyJ) $1+8+27+\dots+8000$ \$Lj y; fhz f?
43. $1^3+2^3+3^3+\dots+K^3=4356$ vdy; K-d; kj igG fhz f?
44. $1+2+3+\dots+p=171$ vdy; $1^3+2^3+3^3+\dots+p^3$ d; kj igG fhz f?
45. $1^3+2^3+3^3+\dots+k^3=8281$ vdy; $1+2+3+\dots+k$ d; kj igG fhz f?

I eJ kj igngz ; tpdhffs;

1. xU \$Lj ; nj hl htupi rapy; 10 kwWk; 18 MtJ c WgGfs; Ki wNa 41 kwWk; 73 vdy; 27 MtJ c Wgi gf; fhz f.
2. xU \$Lj nj hl u; tupi rapy; %dwhTJ c WgG 14> NKYk; xdgj htJ c WgG 52 vdy; 30-tJ c WgG fhz f?
3. xU ngUfFj nj hl upd; Kj y; c WgG 375 kwWk; mj d; 4 tJ c WgG 192 vdy; mj d; nghJ tpfj j i j Ak> Kj y; 14 c WgGfspd; \$Lj i yAk; fhz f.
4. xU ngUfFj nj hl upy; , uz htJ c WgG 3 kwWk; mj d; nghJ tpfj k4/5 vdy; Kj y; 23 c WgGfspd; \$Lj y; fhz f?
5. xU \$Lj ; nj hl htthpi rapy; mLj j Lj j %dW c WgGfspd; \$Lj y; 6 kwWk; mtwwpd; ngUfFj; nj hi f -120 vdy; mk%dW vz fi sf; fhz f.
6. xU ngUfFj; nj hl htthpi rapy; ehdfhtJ c WgG $\frac{2}{3}$ kwWk; mj d; VohtJ c WgG $\frac{16}{81}$ vdy> mgngUfFj; nj hl h; thpi ri af; fhz f.
7. xU ngUfFj; nj hl htthpi rapy; 4 MtJ c WgG kwWk; 7-tJ c WgGfs; Ki wNa 54 kwWk; 1458 vdy> mj nj hl h; thpi ri af; fhz f.
8. xU \$Lj nj hl u; tupi rapy; mLj j Lj j %dW c WgGfspd; \$Lj y; 18 kwWk; mt;TWgGfspd; turf qfspd; \$Lj y; 140 vdy; mk%dW vz fi sf; fhz f.
9. 8 - My; tFgLk; mi dj J %dwyfff , ay; vz fspd; \$Lj y; fhz f.
10. 9 - My; tFgLk; mi dj J %dwyfff , ay; vz fspd; \$Lj y; fhz f.
11. 300 - fFk; 500 - fFk; , i l NaAss 11 - My; tFgLk; mi dj J , ay; vz fspd; \$Lj y; fhz f.
12. xU \$Lj ; nj hl hpy; Kj y; 14 c WgGfspd; \$Lj y; -203 kwWk; mj d; mLj j 11 c WgGfspd; \$Lj y; -572 vdy> mj nj hl i uf; fhz f.
13. $1^2 - 2^2 + 3^2 - 4^2 + \dots$ vdw nj hl hpd; Kj y; 2n c WgGfspd; \$Lj y; fhz f
14. $1^2 - 2^2 + 3^2 - 4^2 + \dots$ vdw nj hl hpd; Kj y; 40 c WgGfspd; \$Lj y; fhz f
15. $6 + 66 + 666 + \dots$ vDk; nj hl hpy; Kj y; n c WgGfspd; \$Lj y; fhz f.
16. $7 + 77 + 777 + \dots$ vDk; nj hl hpy; Kj y; n c WgGfspd; \$Lj y; fhz f.
17. $0.4 + 0.94 + 0.994 + \dots$ vDk; nj hl hpy; Kj y; n c WgGfspd; \$Lj y; fhz f.
18. \$Lj y; fhz f : $12^2 + 13^2 + 14^2 + \dots + 35^2$
19. \$Lj y; fhz f : $1^2 + 3^2 + 5^2 + \dots + 51^2$
20. \$Lj y; fhz f : $11^3 + 12^3 + 13^3 + \dots + 28^3$
21. $5^2+7^2+9^2+\dots+39^2$ vdw nj hl upd; \$Lj y; fhz f?
22. \$Lj y; fhz f : $7 + 14 + 21 + \dots + 490$
23. 11 nr.kp 12 nr.kp 13 nr.kp ... 24 nr.kp Mfpadtwi w Ki wNa gffqfshff; nfhz j 14 rJuqfspd; nkj j g; gugG fhz f.
24. 16 nr.kp 17 nr.kp 18 nr.kp ... 30 nr.kp Mfpadtwi w Ki wNa gffqfshff; nfhz j 15 fdrJuqfspd; fdmsTfspd; \$Lj y; fhz f.
25. $1 + 2 + 3 + 4 + \dots + p = 171$ vdy> $1^3 + 2^3 + 3^3 + \dots + p^3 - d$; kj igi gf; fhz f.
26. $1 + 2 + 3 + 4 + \dots + n = 120$ vdy> $1^3 + 2^3 + 3^3 + \dots + n^3 - d$; kj igi gf; fhz f.

3., awfz j k; , uz L kj gngz ; tpdhffs;

1. efffy; Ki wapy; j bff. $101x + 99y = 499$, $99x + 101y = 501$.
2. Fwffg; ngUfffy; Ki wapy; j bff. $2x + 7y - 5 = 0$, $-3x + 8y = -11$.
3. RUffF. $\frac{5x+20}{7x+28}$
4. $\frac{x^3}{x-2} + \frac{8}{2-x}$ -d; kj gg fhz f.
5. RUffF. $\frac{x^2-2x}{x+2} \times \frac{3x+6}{x-2}$
6. RUffF. $\frac{x^2-36}{x^2-49} \div \frac{x+6}{x+7}$
7. RUffF. $\frac{x^2-81}{x^2-4} \times \frac{x^2+6x+8}{x^2-5x-36}$
8. RUffF. $\frac{x^2-4x-5}{x^2-25} \div \frac{x^2-3x-10}{x^2+7x+10}$
9. RUffF. $\frac{x^2-3x-10}{x^2-x-20} \times \frac{x^2-2x+4}{x^3+8}$
10. RUffF. $\frac{6x^2+9x}{3x^2-12x}$
11. RUffF. $\frac{6x^2-54}{x^2+7x+12}$
12. c^2-d^2 , $c(c-d)$ d; klngh.t fhz f.
13. $35x^5y^3z^4$, $49x^2yz^3$, $14xy^2z^2$ Mfjatwppd; klngh.t. fhz f.
14. $x^2+3xy+2y^2$, $x^2+5xy+6y^2$ Mfjatwppd; c.ngh.fh. fhz f.
15. x^4-27a^3x kwWk; $(x-3a)^2$ Mfjatwppd; klngh.t. fhz f.
16. x^3+y^3 , x^3-y^3 kwWk; $x^4+x^2y^2+y^4$ Mfjatwppd; klngh.k. fhz f.
17. $35a^2c^3b$, $42a^3cb^2$, $30ac^2b^3$ Mfjatwppd; klngh.k. fhz f.
18. x^2y+xy^2 , x^2+xy Mfjatwppd; klngh.k. fhz f.
19. $(a-1)^5(a+3)^2(a-2)^2(a-1)^3(a+3)^4$ Mfjatwppd; klngh.k. fhz f.
20. x^3+x^2-7x-3 vdgi j $(x-3)$ My; tFff fpi l fFk; $\langle T \rangle$ kj p fhz f.
21. $3x^3+4x^2-10x+6$ vdgi j $(3x-2)$ My; tFff fpi l fFk; $\langle T \rangle$ kj p fhz f.
22. $2x^4+x^3-14x^2-19x+6$ -d; xU fhuz p $(2x+1)$ My; tFffkNghJ x^3+ax^2-bx-6 vdgi <thdhy; a -kwWk; b-d; kj gg kwWk; kj pi af; fhz f.
23. $x^4+10x^3+35x^2+50x+29$ vdw gy;YWggf; Nfhi ti a $x+4$ My; tFffk; NghJ x^3-ax^2+bx+6 vdgi <thdhy; a -kwWk; b-d; kj gg kwWk; kj pi af; fhz f.
24. $x^3-6x^2+11x-6$ vdw gy;YWgG Nfhi tff $(x-1)$ xU fhuz p vd eWTF.
25. $16x^2-24x+9$ d; tuff %yk; fhz f.
26. $\frac{64(a+b)^4(x-y)^8(b-c)^6}{25(x+y)^4(a-b)^6(b+c)^{10}}$ d; tuff %yk; fhz f.
27. $6x^2-5x-25=0$ l fhuz p Ki wapy; j bT fhz f.
28. $x^2-7x+12=0$ l Rj j mu Ki wapy; j bT fhz f.
29. $7+\sqrt{3}$ kwWk; $7-\sqrt{3}$ Mfjatwi w %yqfshff; nfhz l , UgbrrkdghL xdwpi d mi kff.
30. $3+\sqrt{7}$, $3-\sqrt{7}$ Mfjatwi w %yqfshff; nfhz l , Ugb rkdghl bi d mi kffTk;
31. $\frac{4+\sqrt{7}}{2}$, $\frac{4-\sqrt{7}}{2}$ Mfjatwi w %yqfshff; nfhz l , Ugb rkdghl bi d mi kffTk;
32. $3x^2-6x+4=0$ vdw rkdghl bd; %yqfs; α, β vdpj $\alpha^2 + \beta^2$; kj gg fhz ;
33. j b: $\sqrt{5}x^2+2x-3\sqrt{5}=0$
34. $x^2-11x-10=0$ vDk; rkdghl bd; %yqfs; j di ki a Muhaf.
35. $4x^2-28x+49=0$ vDk; rkdghl bd; %yqfs; j di ki a Muhaf.
36. $x^2-2x(1+3k)+7(3+2k)=0$; %yqfs; nkanaz fs; kwWkrkk; vdpj; k dkj gg fhz ;
37. $2x^2-10x+k=0$ d; %yqfs; nkanaz fs; kwWk; rkk; vdpj; k d; kj gg fhz f.
38. $3p^2x^2-2pqx+q^2=0$ d; %yqfs; nkanaz fs; myy vd eWTF.
39. a,b,c kwWk; $d \neq 0$ vd mi kej $(a^2+b^2)x^2-2(ac+bd)x+c^2+d^2=0$ vdw rkdghl bd; %yqfs; rkk; vdpj $a/b = c/d$ vd eWTF.
40. $2x^2-3x-1=0$ vdw rkdghl bd; %yqfs; α kwWk; β vdpj NkYk; $\alpha-\beta$ -d; kj jgi gf; fhz f.
41. rkdghL $(1+m^2)x^2+2mcx+c^2-a^2=0$ vdw rkdghl bd; %yqfs; rkk; vdpj; $c^2=a^2(1+m^2)$ vd eWTF.
- 42., U nj hl hej xwi wggi l vz fspd; \$Lj y; 20 vdpj; mtntz fi sf; fhz f.

I eJ kj gngz ; tpdhffs;

1. j b: $3x - 5y = -16$, $2x - 5y = 31$
2. efffy; Ki wapy; j b: $3x + 4y = -25$, $2x - 3y = 6$
3. efffy; Ki wapy; j b: $101x + 99y = 499$, $99x + 101y = 501$

4. Xh <hpyff vz z py; xdwk; , l , yff vz > gj j hk; , l , yff vz i z g; Nghy; , U kl qfhf c s s J. , yffqfs; , l k; khwwdhy; fji l fFk; Gj pa vz > nfhLffggll vz i z tpi 27 mj pffk; vdpj> nfhLffggll <hpyff vz i z fz Lgib.
5. 11 ngdrpyfs; kwWk; 3 mogghdfspd; nkj j tpi y & 50. NkYk; 8 ngdrpyfs; kwWk; 3 mogghdfspd; nkj j tpi y & 38 vdpj> xU ngdrpy; kwWk; xU mogghd; tpi yi af; fhz f.
6. FWfF ngWfffy; Ki wi a gadgLj j p gpd; tUk; rkdghLfi s j h; $3x + 4y = 24$, $20x - 11y = 47$
7. 3 ehwfhyfys; kwWk; 2 Nki rfs; pd; nkj j tpi y & 700. NkYk; 5 ehwfhyfys; kwWk; 3Nki rfs; pd; nkj j tpi y & 1100 vdpj> 2 ehwfhyfys; kwWk; 3 Nki rfs; pd; nkj j tpi yi af; fhz f.
8. fhuz jggLj J f: $2x^3 - 3x^2 - 3x + 2$ vDK; Nfhi ti a xUgbf; fhuz pshf fhuz jggLj J f
9. fhuz jggLj J f: $x^3 - 3x^2 - 10x + 24$
10. fhuz jggLj J f: $x^3 - 2x^2 - 5x + 6$
11. fhuz jggLj J f: $x^3 - 23x^2 + 142x - 120$
12. fhuz jggLj J f: $x^3 - 7x + 6$
13. fhuz jggLj J f: $2x^3 + 11x^2 - 7x - 6$
14. fhuz jggLj J f: $x^3 - 5x^2 - 2x + 24$
15. $6(2x^2 - 3x - 2)$, $8(4x^2 + 4x + 1)$, $12(2x^2 + 7x + 3)$ Mfpa gy; YWgGf; Nfhi tfs; pd; kP ngh. t fhz f.
16. $3x^4 + 6x^3 - 12x^2 - 24x$ kwWk; $4x^4 + 14x^3 + 8x^2 - 8x$ Mfpa gy; YWgGf; Nfhi tfs; pd; kP ngh. t fhz f.
17. $x^4 + 3x^3 - x - 3$ kwWk; $x^3 + x^2 - 5x + 3$ Mfpa gy; YWgGf; Nfhi tfs; pd; kP ngh. t fhz f.
18. $2x^3 + 2x^2 + 2x + 2$ kwWk; $6x^3 + 12x^2 + 6x + 12$ Mfpa gy; YWgGf; Nfhi tfs; pd; kP ngh. t fhz f.
19. RUFFF: $\frac{2x-1}{x^2+2x+4} \times \frac{x^4-8x}{2x^2+5x-3} \times \frac{x+3}{x^2-2x}$
20. RUFFF: $\frac{x^2-16}{x^2-3x+2} \times \frac{x^2-4}{x^3+64} \times \frac{x^2-4x+16}{x^2-2x-8}$
21. RUFFF: $\frac{2x^2+13x+15}{x^2+3x-10} \div \frac{2x^2-x-6}{x^2-4x+4}$
22. RUFFF: $\frac{x^2+11x+28}{x^2-4x-77} \div \frac{x^2+7x+12}{x^2-2x-15}$
23. $P = \frac{x}{x+y}$, $Q = \frac{y}{x+y}$ vdpj> $\frac{1}{p-q} - \frac{2Q}{p^2-Q^2}$ l f; fhz f.
24. tHff%yk; fhz f: $(6x^2 + 5x - 6)(6x^2 - x - 2)(4x^2 + 8x + 3)$
25. $(2x^2 - 5x + 2)(3x^2 - 5x - 2)(6x^2 - x - 1)$ d; tuff Kyk; fhz f
26. $x^4 - 10x^3 + 37x^2 - 60x + 36$ - d; tHff%yj j j f; fhz f.
27. $x^4 - 6x^3 + 19x^2 - 30x + 25$ - d; tHff%yj j j f; fhz f.
28. $x^4 - 4x^3 + 10x^2 - 12x + 9$ d; tuff%yk; fhz f
29. $9x^4 - 6x^3 + 7x^2 - 2x + 1$ - d; tHff%yj j j f; fhz f.
30. $4 + 25x^2 - 12x - 24x^3 + 16x^4$ d; tHff%yj j j f; fhz f.
31. $m - nx + 28x^2 + 12x^3 + 9x^4$ - MdJ xU KO thffk; vdpj> m, n Mfpatwmpd; kj jggfi sf; fhz f.
32. $4x^4 - 12x^3 + 37x^2 + ax + b$ - MdJ xU KO thffk; vdpj> a, b Mfpatwmpd; kj jggfi sf; fhz f.
33. $ax^4 - bx^3 + 40x^2 + 24x + 36$ - MdJ xU KO thffk; vdpj> a, b Mfpatwmpd; kj jggfi sf; fhz f.
34. xU vz ; mj d; j i yfbb Mfpatwmpd; \$Lj y; $\frac{65}{8}$ vdpj> mej vz i z f; fhz f.
35. , uz L kpi f vz f; s; pd; tj j pahrk; 45. rmpa vz z pd; thffk; MdJ > nghpa vz z pd; ehdF kl qf; p; Fr; rkk; vdpj> mej vz fi sf; fhz f.
36. xU nrt; t; tbt epyk; 20 kP eSk > 14 kP mfyk; nfhz l J. mi j rRwmpYk; nts; jggw j py; mi ke; Jss r; bh; d mfyk; s; s; ghi j apd; gugG 111 r. kP vdpj> > ghi j apd; mfyk; vdd?
37. mi r; t; w; ehpy; , aej jggll f; pd; Nt; f; k; k; z p; f; F 15 f; p; k; v; d; f. mggl F eNuhl l j j pd; j pi ray; 30 f; p; k; J; uk; nrdw > g; m; F v; j; h; j pi ray; j p; k; g; 4 k; z p 30 e; p; k; q; f; s; py; k; z Lk; G; w; g; l l , l j j p; w; F j p; k; g; t; e; j; h; y; e; h; p; d; Nt; f; j j f; fhz f.
38. xU Nti yi a nraa A fF B i a tpi 6 ehlf; s; Fi wthf Nj i tggLf; p; W. , UtUk; Nrhe; J; mt; Nti yi ar; nraj hy; mi j 4 ehlf; s; py; K; b; f; f , aYk; v; d; py; B j d; Na mt; Nti yi a vj j i d ehlf; s; py; K; b; f; f , aYk?.
39. xU tU l j j p; w; F K; d; G > xU th; p; d; taJ mt; Ui la k; f; d; d; tai j g; Nghy; 8 kl q; F. j w; NghJ mt; Ui la taJ > k; f; d; d; taj; p; d; thff; j j p; w; F; rkk; vdpj> mth; f; Si la j w; Ngh; j a tai j f; fhz f.
40. $3x^2 - 5x + 2 = 0$ vdw rkdghl bd; %yqfs; α, β vdpj> gpd; tUt; dtwmpd; kj jggfi sf; fhz f.
(i) $\frac{\alpha}{\beta} + \frac{\beta}{\alpha}$ (ii) $\alpha - \beta$ (iii) $\frac{\alpha^2}{\beta} + \frac{\beta^2}{\alpha}$
41. $5x^2 - px + 1 = 0$ vdw rkdghl bd; %yqfs; α kwWk; β vdf; NkYk; $\alpha - \beta = 1$ vdpj> p - d; kj jgi gf; fhz f.
42. $3x^2 + kx - 81 = 0$ vdw rkdghl bd; xU %yk; kwnwhU %yj j pd; thff; nkdpj> k - d; kj jgi gf; fhz f.

4.mz pfs;

, uz l kj gngz ; tpdhffs;

- $a_{ij} = |2i - 3j|$ vdw c WgGfi sf; nfhz l thpi r 2×3 css mz p $A = [a_{ij}]$ -api d mi kffTk;
- $a_{ij} = 2i - j$ vdw c WgGfi sf; nfhz l thpi r 2×2 css mz p $A = [a_{ij}]$ -api d mi kffTk;
- $a_{ij} = ij$ vdw c WgGfi sf; nfhz l thpi r 2×2 css mz p $A = [a_{ij}]$ -api d mi kffTk;
- $a_{ij} = \frac{|2i-3j|}{2}$ vdw c WgGfi sf; nfhz l thpi r 3×2 css mz p $A = [a_{ij}]$ -api d mi kffTk;
- gpd;tUk; mz prrkdgHl bypUeJ x, y kwWk; z - fsPd; kj gGfi sf; fhz f.

$$\begin{pmatrix} 5x+2 & y-4 \\ 0 & 4z+6 \end{pmatrix} = \begin{pmatrix} 12 & -8 \\ 0 & 2 \end{pmatrix}$$
- $A = \begin{pmatrix} 3 & 2 \\ 5 & 1 \end{pmatrix}$ kwWk; $B = \begin{pmatrix} 8 & -1 \\ 4 & 3 \end{pmatrix}$ vdpY; $C = 2A + B$ vdw mz pi af; fhz f.
- $A = \begin{pmatrix} 4 & -2 \\ 5 & -9 \end{pmatrix}$ kwWk; $B = \begin{pmatrix} 8 & 2 \\ -1 & -3 \end{pmatrix}$ vdpY; $6A - 3B$ vdw mz pi af; fhz f.
- $A = \begin{pmatrix} 2 & 3 \\ 4 & 1 \\ 5 & 0 \end{pmatrix}$ vdpY; A - apd; epi u epY; khwW mz pi af; fhz f.
- $A = \begin{pmatrix} 8 & 5 & 2 \\ 1 & -3 & 4 \end{pmatrix}$ vdpY; A^T kwWk; $(A^T)^T$ Mfpatwi wf; fhz f.
- $A = \begin{pmatrix} 1 & 2 & 3 \\ 2 & 4 & -5 \\ 3 & -5 & 6 \end{pmatrix}$ vdpY; $(A^T)^T = A$ vdgi j r; rhghhff.
- $A = \begin{pmatrix} 8 & 3 & 2 \\ 5 & 9 & 1 \end{pmatrix}$ kwWk; $B = \begin{pmatrix} 1 & -1 \\ 3 & 0 \end{pmatrix}$ vdpY; $A+B$, Uf;Fkhdhy; mj i df; fhz f.
- $\begin{pmatrix} 3 & -2 \\ 5 & 1 \end{pmatrix} \begin{pmatrix} 4 & 1 \\ 2 & 7 \end{pmatrix}$ vdw mz pfsPd; ngUffi yf; fhz f.
- $\begin{pmatrix} 2 & 9 & -3 \\ 4 & -1 & 0 \end{pmatrix} \begin{pmatrix} 4 & 2 \\ -6 & 7 \\ -2 & 1 \end{pmatrix}$ vdw mz pPd; ngUffi yf; fhz f. (ngUff KbAkhdhy)
- $A = \begin{pmatrix} 5 & 6 & -2 & 3 \\ 1 & 0 & 4 & 2 \end{pmatrix}$ kwWk; $B = \begin{pmatrix} 3 & -1 & 4 & 7 \\ 2 & 8 & 2 & 3 \end{pmatrix}$ vdpY; $A+B$ -l f; fhz f.
- $A = \begin{pmatrix} 2 & 3 \\ -9 & 5 \end{pmatrix} - \begin{pmatrix} 1 & 5 \\ 7 & -1 \end{pmatrix}$ vdpY; A - d; \$l y; NehkhW mz pi af; fhz f.
- $a \begin{pmatrix} 2 \\ 3 \end{pmatrix} + b \begin{pmatrix} -1 \\ 1 \end{pmatrix} = \begin{pmatrix} 10 \\ 5 \end{pmatrix}$ vdpY; a, b, d; kj gGfi s fhz f.
- j hT fhz f. $\begin{pmatrix} y \\ 3x \end{pmatrix} = \begin{pmatrix} 6-2x \\ 31+4y \end{pmatrix}$
- $\begin{pmatrix} 2x+y \\ x-3y \end{pmatrix} = \begin{pmatrix} 5 \\ 13 \end{pmatrix}$ vdpY; x, y, d; j hTfi s fhz f.
- ngUffFf. $\begin{pmatrix} 6 \\ -3 \end{pmatrix} (2 - 7)$
- $A = \begin{pmatrix} 3 & 2 \\ 5 & 1 \end{pmatrix}$ $B = \begin{pmatrix} 1 & -2 \\ 2 & 3 \end{pmatrix}$ kwWk; $O = \begin{pmatrix} 0 & 0 \\ 0 & 0 \end{pmatrix}$ vdpY; gpd;tUtdtwi w rhghh;
 i) $A+B = B+A$, ii) $A+(-A) = 0 = (-A)+A$
- $A = \begin{pmatrix} 1 & 3 \\ 9 & -6 \end{pmatrix}$ vdpY; $AI = IA = A$ vdgi j rhghhff. , qF I vdgJ thpi r 2 nfhz l myF mz p
- $\begin{pmatrix} 1 & 2 \\ 3 & 3 \end{pmatrix} \begin{pmatrix} x & 0 \\ 0 & y \end{pmatrix} = \begin{pmatrix} x & 0 \\ 9 & 0 \end{pmatrix}$ vdpY; x kwWk; y -fsPd; kj gGfi s fhz f.

I eJ kj gngz ; tpdhffs;

- $2X + 3Y = \begin{pmatrix} 2 & 3 \\ 4 & 0 \end{pmatrix}$ kwWk; $3X + 2Y = \begin{pmatrix} 2 & -2 \\ -1 & 5 \end{pmatrix}$ vdpY; X kwWk; Y Mfpa mz pfi sf; fhz f.
- $A = \begin{pmatrix} 4 & 1 & 2 \\ 1 & -2 & 3 \\ 0 & 3 & 2 \end{pmatrix}$ $B = \begin{pmatrix} 2 & 0 & 4 \\ 6 & 2 & 8 \\ 2 & 4 & 6 \end{pmatrix}$ kwWk; $C = \begin{pmatrix} 1 & 2 & -3 \\ 5 & 0 & 2 \\ 1 & -1 & 1 \end{pmatrix}$ vdpY; $A+(B+C) = (A+B) + C$ vdgi j rhghh.

3. j hf;f: $\begin{pmatrix} x^2 \\ y^2 \end{pmatrix} + 3 \begin{pmatrix} 2x \\ -y \end{pmatrix} = \begin{pmatrix} -9 \\ 4 \end{pmatrix}$
4. j h;T fhz f; $\begin{pmatrix} 3 & 2 \\ 4 & 5 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 8 \\ 13 \end{pmatrix}$
5. $A = \begin{pmatrix} 3 & 2 \\ -1 & 4 \end{pmatrix}$ $B = \begin{pmatrix} -2 & 5 \\ 6 & 7 \end{pmatrix}$ kWwK; $C = \begin{pmatrix} 1 & 1 \\ -5 & 3 \end{pmatrix}$ vdiy; $A(B+C) = AB + AC$ vdi j rhghh;fTk;
6. $A = \begin{pmatrix} 1 & -1 \\ 2 & 3 \end{pmatrix}$ vdiy; $A^2 - 4A + 5I_2 = 0$ vd eWTf.
7. $A = \begin{pmatrix} -1 & 2 & 1 \\ 1 & 2 & 3 \end{pmatrix}$, $B = \begin{pmatrix} 0 \\ 1 \\ 2 \end{pmatrix}$ kWwK; $C = (2 \ 1)$ vdiy; $(AB)C = A(BC)$ vdi j rhghh;
8. $A = \begin{pmatrix} 3 & 2 \\ 4 & 0 \end{pmatrix}$ kWwK; $B = \begin{pmatrix} 3 & 0 \\ 3 & 2 \end{pmatrix}$ vdiy; AB kWwK; BA Mfpatwi wf; fhz f. mi t rkkhf , Uf;Fkh?
9. $A = \begin{pmatrix} 8 & -7 \\ -2 & 4 \\ 0 & 3 \end{pmatrix}$ kWwK; $B = \begin{pmatrix} 9 & -3 & 2 \\ 6 & -1 & -5 \end{pmatrix}$ vdiy; AB kWwK; BA Mfpatwi wf; fhz f.
10. j hf;f: $(x \ 1) \begin{pmatrix} 1 & 0 \\ -2 & -3 \end{pmatrix} \begin{pmatrix} x \\ 5 \end{pmatrix} = 0$
11. $A = \begin{pmatrix} 1 & -4 \\ -2 & 3 \end{pmatrix}$ kWwK; $B = \begin{pmatrix} -1 & 6 \\ 3 & -2 \end{pmatrix}$ vdiy; $(A+B)^2 \neq A^2 + 2AB + B^2$ vd eWTf.
12. $A = \begin{pmatrix} 5 & 2 \\ 7 & 3 \end{pmatrix}$ kWwK; $B = \begin{pmatrix} 2 & -1 \\ -1 & 1 \end{pmatrix}$ vdiy; $(AB)^T = B^T A^T$ vdi j rhghh;
13. $A = \begin{pmatrix} 5 & 3 \\ 7 & 5 \end{pmatrix}$ $X = \begin{pmatrix} x \\ y \end{pmatrix}$ kWwK; $C = \begin{pmatrix} -5 \\ -11 \end{pmatrix}$ kWwK; $AX = C$ vdiy; x kWwK; y - fs;pd; kj jgGfi sf; fhz f.
14. $\begin{pmatrix} 3 & 5 \\ 1 & 2 \end{pmatrix}$ kWwK; $\begin{pmatrix} 2 & -5 \\ -1 & 3 \end{pmatrix}$ Mfpat m; j; ngUf;fi yg; nghUj ;J xdWfnfhdW NehkhW m; j; vd eWTf.
15. $A = \begin{pmatrix} -2 \\ 4 \\ 5 \end{pmatrix}$ kWwK; $B = (1 \ 3 \ -6)$ vdw m; j; p;fS f;F $(AB)^T = B^T A^T$ vdi j rhghh;
16. $A = \begin{pmatrix} a & b \\ c & d \end{pmatrix}$ kWwK; $I_2 = \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$ vdiy; $A^2 - (a+d)A = (bc-ad)I_2$ vd eWTf.

5. Majnjhi y tbtpay;

, uz L kj gngz ; tpdhffs;

- (3,5) kwWk; (8,10) vdw Gsspi s NrufFk; Nfhl Lj; Jz bi d 2:3 vdw tpfj j j py; c l Gwkhf gupfFk; Gsspi af; fhz f.
- (-3,5) kwWk; (4,-9) vdw Gsspi s NrufFk; Nfhl Lj; Jz bi d 1:6 vdw tpfj j j py; c l Gwkhf gupfFk; Gsspad; mrRj nj hi yTfi sf; fhz f.
- (3,4) kwWk; (-6,2) vdw Gsspi s , i z fFk; Nfhl Lj; Jz bi d 3:2 vdw tpfj j j py; ntsigGwkhf gupfFk; Gsspi af; fhz f.
- (3,0), (-1,4) vdw Gsspi s , i z fFk; Nfhl Lj; Jz bd; eLgGsspi af; fhz f.
- (1,-1), (-5,3) vdw Gsspi s , i z fFk; Nfhl Lj; Jz bd; eLgGsspi af; fhz f.
- A(4,-6), B(3,-2), C(5,2) Mfpa Gsspi s c rrpshff; nfhz l Kfnfhz j j pd; eLfnfhl L i kak; fhz f.
- (1,3), (2,7), (12,-16) Mfpa Gsspi s c rrpshff; nfhz l Kfnfhz j j pd; eLfnfhl L i kak; fhz f.
- Gssp (1,3) l eLfnfhl L i kakhff; nfhz l Kfnfhz j j pd; , U Ki dfs; (-7,6) kwWk; (8,5) vdw Kfnfhz j j pd; %dwhtJ Ki di af; fhz f.
- A(-6,-5), B(-6,4) vdg d , U Gsspfs; vdf. Nfhl Lj; Jz l AB -apd; Nky; $AP = \frac{2}{9} AB$ vdwthW mi keJss GsspP -i af; fhz f.
- rha:T -3 MfTk; yntil L 4 MfTk; c ss NeufNfhl bd; rkdghL ahJ?
- rha:Tf; Nfhz k; 45° MfTk; y ntil L $\frac{2}{5}$ MfTk; c ss NeufNfhl bd; rkdghL ahJ.
- $4x-2y+1=0$ vdw NeufNfhl bd; rha:T kwWk; y ntil L fhz f.
- $5x+3y-15=0$ vdw NeufNfhl hdJ Ma mrRfsy; Vwglj; Jk; ntil Lj; Jz lfi sf; fhz f.
- $2x-y+16=0$ vdw NeufNfhl hdJ Ma mrRfsy; Vwglj; Jk; ntil Lj; Jz lfi sf; fhz f.
- xU NeufNfhl bd; x ntil L $\frac{2}{3}$ kwWk; y ntil L $\frac{3}{4}$ vdw mfNfhl bd; rkdghl i l fhz ;
- Ma mrRfsy; 5,3 vdw ntil Lj; Jz lfi s Vwglj; Jk; NeufNfhl bdrkdghl i l fhz f.
- (-1,1), (2,-4) vdw Gsspi s , i z fFk; Nfhl bd; rkdghL ahJ.
- $y=7$ vdw Nfhl bwF nrqFj j hdJk(1>2) vdw Gssp topahf nry; tJ kh d NehNfhl bd; rkdghL fhz f.
- xU t l j j j pd; i kak; (-6,4) mt; t l j j j pd; t p l j j j pd; xU Ki dgGssp Mj pgGssp vdwpy; kwnwhU Ki dgGsspi af; fhz f.
- (3,-2), (7,2) vdw Gsspi s , i z fFk; Nfhl bd; rha:T ahJ
- (2,-4) kwWk; Mj pgGsspi a , i z fFk; Nfhl bd; rha:T ahJ
- rha:T -4 MfTk; (1,2) vdw Gssp topahfTk; nry; Yk; NeufNfhl bd; rkdghL ahJ
- rha:T $\frac{1}{3}$ MfTk; (-2,3) vdw Gssp topahfTk; nry; Yk; NeufNfhl bd; rkdghL ahJ.
- $3x+2y-12=0$, $6x+4y+8=0$ vdw NfhlFs; xdWfnfhdW , i z ahdi t vd ep&gp
- $x+2y+1=0$, $3x+6y+2=0$ vdw NfhlFs; xdWfnfhdW , i z ahdi t vd ep&gp
- $x+2y+1=0$, $2x-y+5=0$ vdw NfhlFs; xdWfnfhdW nrqFj; J vd ep&gp
- $\frac{y}{2} = x - p$ kwWk; $ax+5=3y$ vdw NehNfhlFs; xdWfnfhdW , i z vdwpy; a-d; kj igi g fhz ;
- $5x-2y-9=0$, $ay+2x-11=0$ Mfpa NfhlFs; xdWfnfhdW nrqFj; J vdwpy; a-d; kj igi g fhz ;
- $3x-y+7=0$ vdw Nfhl bwF , i z ahfTk(1,-2) vdw Gssp topahfTk; nry; Yk; NeufNfhl bd; rkdghL fhz f.
- $x-2y+3=0$ vdw Nfhl bwF nrqFj j hfTk(1,-2) vdw Gssp topahfTk; nry; Yk; NeufNfhl bd; rkdghL fhz f.
- A(4,-6), B(3,-2), C(5,2) Mfpad Kfnfhz k; ABC d; c rrpfs; c rrp A yUeJ ti uaggLk; eLfnfhl bd; rkdghl i l f; fhz f
- P(1,-3), Q(-2,5), R(-3,4) Mfpad Kfnfhz k; PQR d; c rrpfs; c rrp R yUeJ ti uaggLk; eLfnfhl bd; rkdghl i l f; fhz f.
- A(2,1), B(6,-1), C(4,11) Mfpad Kfnfhz k; ABC d; c rrpfs; c rrp A yUeJ ti uaggLk; Fj; J fnfhl bd; rkdghl i l f; fhz f
- A(3,4), B(-1,2) vdw Gsspi sr; NrufFk; NeufNfhl bd; i kafFj; J fnfhl bd; rkdghl bi df; fhz f

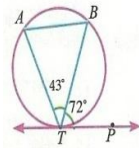
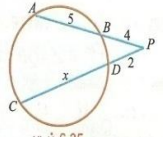
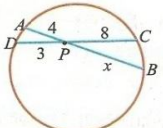
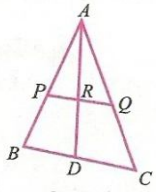
I eJ kj gngz ; tpdhffs;

- (7>3)>(6>1)>(8>2)kwWk(p>4) vdg d Xh; , i z fuj j pd; thpi rggbmi kej c rrpfsvdpy; p-d; kj igi g fhz f.

2. $gfhT$ Rj j μ j i j gadg Lj j p (1>0) > (5>3) > (2>7) kwWk; (-2>4) vdw thpi rapy; vLj J fnfhssgg l l Gsspf s; Xh; , i z fuj j pd; c rrp f s; MFk; vd eWTF.
3. (1>2) > (-3>4) kwWk; (-5>6) Mfjatwi w Ki dfshff; nfhz l K fNfhz j j pd; gugi gf; fhz f.
4. (5,2) ,(3,-5) kwWk; (-5,-1) Mfja Gsspfi s c rrp fshf nfhz l K fNfhz j j pd; gugG fhz f.
5. (-4,-5) ,(4,5) kwWk; (-1,-6) Mfja Gsspfi s c rrp fshf nfhz l K fNfhz j j pd; gugG fhz f.
6. A(6>7) > B(-4>1) kwWk; C(a>9) Mfjatwi w Ki dfshff; nfhz l ΔABC -d; gugG 68 r.myFfs; vdiy; a -d; kj igi g fhz f.
7. (0,0),(4,a) ,(6,4) Mfja Gsspfi s c rrp fshff; nfhz l K fNfhz j j pd; gugG 17 r.myFfs; vdiy; a - d; kj igi gf; fhz f
8. (m,m),(4,5) ,(6,-1) Mfja Gsspfi s c rrp fshf nfhz l K fNfhz j j pd; gugG 9 r.myFfs; vdiy; m - d; kj igi gf; fhz f
9. A(2>3) > B(4>0) kwWk; C(6>3) Mfja Gsspfs; xNu NehfNfhl by; mi keJssd vd eUgp
10. (4,3) ,(1,2) kwWk; (-2,1) vdw Gsspfs; xNu NeufNfhl by; mi kAk; Gsspsh vd Muhaf.
11. A(2>5) > B(3>4) kwWk; C(9>k) Mfja Gsspfs; xNu Nfhl i ktd vdiy; k -d; kj igG fhz f.
12. (k,k) ,(2,3) kwWk; (4,-1) Mfja Gsspfs; xU Nfhl i ktd vdiy; k - d; kj igg fhz f
13. (a>0) > (0>b) Mfja Gsspfi s , i z fFk; NehfNfhl Lj ; Jz bd; Nky; mi keJss Vnj Dk; xU Gssp P(x,y) vdiy; $\frac{x}{a} + \frac{y}{b} = 1$ vd eWTF. , qF a,b \neq 0.
14. A(h>0) > B(a>b) kwWk; C(ok) Mfja Gsspfs; xNu NehfNfhl by; mi kAk; Gsspfs; vdiy; $\frac{a}{h} + \frac{b}{k} = 1$ vd eWTF. , qF h,k \neq 0.
15. (-4>2) > (-3>5) > (3>2) kwWk; (2>3) Mfjatwi w Ki dfshff; nfhz l ehwfuj j pd; gugi gf; fhz f.
16. (6,9) ,(7,4) ,(4,2) kwWk; (3,7) Mfjatwwhy; mi kffggLk; ehwfuj j pd; gugG fhz f.
17. (-3,4) ,(5,-6) ,(4,-1) kwWk; (1,2) Mfja Gsspfi s c rrp fshf nfhz l ehwfuj j pd; gugG fhz f.
18. (-4,5) ,(0,7) ,(5,-5) kwWk; (-4,-2) Mfja Gsspfi s c rrp fshf nfhz l ehwfuj j pd; gugG fhz f.
19. (6>7) > (2>9) kwWk; (-4>1) Mfjad xU K fNfhz j j pd; Ki dfs; vdiy; K fNfhz j j pd; eLfnfhl fspd; rha;Tfi sf; fhz f.
20. A(-5>7) > B(-4>5) kwWk; C(4>5) Mfjad ΔABC -d; Ki dfs; vdiy; K fNfhz j j pd; Fj J auqfspd; rha;Tfi sf; fhz f.
21. A(2>1) > B(-2>3) kwWk; C(4>5) Mfjad ΔABC -d; c rrp f s; vdiy; c rrp A - apylUeJ ti uaggLk; eLfnfhl bd; rkdghl i l f; fhz f.
22. (2>2) vdw Gssp topnry; tJk > ntl Lj ; Jz Lfspd; \$Lj y; 9 MfTk; nfhz l NehfNfhl fspd; rkdghl bi df; fhz f.
23. $2x+y-3=0$, $5x+y-6=0$ Mfja NehfNfhl f s; rej pfFk; Gssp topahfTk > (1>2) > (2>1) Mfja Gsspfi s , i z fFk; NehfNfhl bwF , i z ahfTk; c ss NehfNfhl bd; rkdghl i l f; fhz f.
24. $5x-6y=1$, $3x+2y+5=0$ Mfja NehfNfhl f s; rej pfFk; Gssp topahfTk > $3x-5y+11=0$ vdw NehfNfhl bwF nrqFj j hfTk; mi kAk; NehfNfhl bd; rkdghl i l f; fhz f.
25. $3x -y+9=0$, $x+2y=4$ Mfja NeufNfhl f s; rej pfFk; GsspAl d; $2x+y-4=0$, $x-2y+3=0$ Mfja NeufNfhl f s; ntl Lk; Gsspi a , i z fFk; NeufNfhl bd; rkdghl i l f; fhz f.
26. ΔABC -d; Ki dfs; A(2>4) > B(3>3) > C(-1>5) vdiy; B - apylUeJ ti uaggLk; Fj J Nfhl L topnry; Yk; NehfNfhl bd; rkdghl i l f; fhz f.
27. ΔABC -d; Ki dfs; A(-4>4) > B(8>4) > C(8>10) vdiy; A - apylUeJ ti uaggLk; eLfnfhl L topnry; Yk; NehfNfhl bd; rkdghl i l f; fhz f.
28. xU t l i j j pd; , U t p l i q f s p d; rkdghLfs; $x+2y=7$, $2x+y=8$ kwWk; t l i j j pd; kU mi keJss xU Gssp (0>2) vdiy > , t; t l i j j pd; Muj i j fhz f.

6. tbtpay; , U kj gngz ; tpdhffs;

1. D kwWk; E Mfpa GsspfS; Ki wNa $\triangle ABC$ - d; gffqfS; AB kwWk; AC-fs; DE || BC vdwthw c ssd. NkYk \triangleright AD=6 nr.k \triangleright DB=9nr.k \triangleright kwWk; AE=8nr.k \triangleright vdpy; AC i af; fhz f.
2. D kwWk; E Mfpa GsspfS; Ki wNa $\triangle ABC$ - d; gffqfS; AB kwWk; AC-fs; DE || BC vdwthw c ssd. NkYk \triangleright AD=4x-3 nr.k \triangleright DB=3x-1nr.k \triangleright kwWk; AE=8x-7nr.k \triangleright vdpy; EC=5x-3vdpy; x i af; fhz f.
3. E kwWk; F vdw GsspfS; Ki wNa $\triangle PQR$ -d; gffqfS; PQkwWk; PRMfpa twpc; kU mi ke; J ssd. NkYk; PE=3.9 nr.k \triangleright EQ=3nr.k \triangleright PF=3.6 nr.k \triangleright vdpy; FR=2.4nr.k \triangleright vdpy; EF || QR i a rhghhf.
4. $\triangle ABC$ - y; DE || BC kwWk; $\frac{AD}{DB} = \frac{2}{3}$ AE = 3.7 nr.k \triangleright vdpy \triangleright EC - i af; fhz f.
5. $\triangle PQR$ - d; gffqfS; PQ kwWk; PR fs; kU mi kej GsspfS; S kwWk; T vdf. NkYk; ST || QR, PR = 5.6 nr.k \triangleright kwWk; $\frac{PS}{SQ} = \frac{3}{5}$ vdpy \triangleright PT - i af; fhz f.
6. $\triangle ABC$ - y; $\angle A$ vdw Nfhz j j pd; c l Gw , U rkntl b AD MdJ \triangleright gffk; BC - i a D -y; rej pffpwJ. BD =2.5 nr.k \triangleright AB = 5 nr.k \triangleright kwWk; AC =4.2 nr.k \triangleright vdpy; DC i a fhz f.
7. $\triangle ABC$ - y; $\angle A$ vdw Nfhz j j pd; c l Gw , U rkntl b AD MdJ \triangleright gffk; BC - i a D -y; rej pffpwJ. AB =5.6 nr.k \triangleright AC = 6 nr.k \triangleright kwWk; DC =3 nr.k \triangleright vdpy; AC i a fhz ;
8. $\triangle ABC$ - y; $\angle A$ vdw Nfhz j j pd; c l Gw , U rkntl b AD MdJ \triangleright gffk; BC - i a D -y; rej pffpwJ. AB =x AC =x-2 kwWk; BD =x+2 , DC =x-1 vdpy; x- i a fhz ;
9. $\triangle ABC$ - y; $\angle A$ vdw Nfhz j j pd; nts; gGw , U rkntl b MdJ BC -d; el rpi a E -y; rej pffpwJ. AB =10 nr.k \triangleright AC =6 nr.k \triangleright kwWk; BC =12 nr.k \triangleright vdpy; CE i a fhz ;
10. gl j j py; AP =3 nr.k \triangleright PAR=4.5nr.k \triangleright AQ =6 nr.k \triangleright AB =5 nr.k \triangleright kwWk; AC =10 nr.k \triangleright vdpy; AD i a fhz ;
11. g g h f u j ; N j w w j i j (g h e j a d) v O J .
12. n j h L N f h L e h z ; N j w w j i j v O J .
13. x U t l i j j j p y ; A B \triangleright C D v d D k ; , U e h z f s ; x d i w n a h d W c l G w k h f P - a p y ; n t l b n f h s ; f p d w d . N k Y k ; C P = 4 n r . k \triangleright A P = 8 n r . k \triangleright k w W k ; P B = 2 n r . k \triangleright v d p y ; P D i a f ; f h z ;
14. x U t l i j j j p y ; A B \triangleright C D v d D k ; , U e h z f s ; x d i w n a h d W c l G w k h f P - a p y ; n t l b n f h s ; f p d w d . N k Y k ; A P = 12 n r . k \triangleright A B = 15 n r . k \triangleright k w W k ; C P = P D v d p y ; C D i a f ; f h z ;
15. A B \triangleright C D v d D k ; , U e h z f s ; t l i j j j p y F n t s ; N a P - a p y ; n t l b f ; n f h s ; f p d w d . N k Y k ; A B = 4 n r . k \triangleright B P = 5 n r . k \triangleright k w W k ; P D = 3 n r . k \triangleright v d p y ; C D i a f ; f h z f .
16. A B \triangleright C D v d D k ; , U e h z f s ; t l i j j j p y F n t s ; N a P - a p y ; n t l b f ; n f h s ; f p d w d . N k Y k ; B P = 3 n r . k \triangleright C P = 6 n r . k \triangleright k w W k ; C D = 2 n r . k \triangleright v d p y ; A B i a f ; f h z f .
17. g l j j j p y ; x - d ; k j g g f h z f .
18. g l j j j p y ; x - d ; k j g g f h z f .
19. g l j j j p y ; T P x U n j h L N f h L . A , B v d g d t l i j j j p d ; k U s s G s s p f S ; $\angle B T P = 72^\circ$ kwWk; $\angle A T B = 43^\circ$ vdpy; $\angle A B T$ i f ; fhz f .



I e; j kj gngz ; tpdhffs;

1. mbggi l tpfij rkj ; Nj ww; myyJ Nj y;] ; Nj wwj i j vOj p epWT.
2. mbggi l tpfij rkj ; Nj wwj j pd; kWj i yi a vOj p epWT.
3. Nfhz , Urkntl bj ; Nj wwj i j vOj p ep&gp (c l Gwk; k l Lk)
4. Nfhz , Urkntl bj ; Nj wwj pd; kWj i yi a vOj p ep&gp (c l Gwk; k l Lk)
5. ABCD vdw ehwfuk \triangleright m j d; vyyh gffqfS k; xU t l i j j i j n j h L k h W mi ke; J s s J . AB = 6 nr.k \triangleright BC = 6.5 nr.k \triangleright kwWk; CD = 7 nr.k \triangleright vdpy \triangleright AD - d; eSj i j f; fhz f.
6. xU , i z f u j j p d; vyyh gffqfS k; xU t l i j j i j n j h L k h d h y ; m t ; t p i z f u k ; xU r h a r J u k h F k ; v d e p W T f .
7. n r t ; t f k ; ABCD - d; c l Gw G s s p O - t p y l e ; J n r t ; t f j j p d ; K i d f s ; A , B , C , D , i z f f g g l L s s d v d p y ; O A ^ 2 + O C ^ 2 = O B ^ 2 + O D ^ 2 v d e p W T f .

8. $\triangle ABC$ - y; gf;fq;fs; AB kwWk; AC - apy; Ki wNa P kwWk; Q vdw Gsspf; c ssd.
 AP = 3 nr.kp PB = 6 nr.kp AQ = 5 nr.kp kwWk; QC = 10 nr.kp vdp; BC = 3 PQ vd eWTF.
9. A, B vdgd $\triangle PQR$ - d; gf;fq;fs; PQ, PR - fsp; Nky; mi kej Gsspf; vdf. NkYk;
 AB \parallel QR , AB = 3 nr.kp PB = 2 nr.kp kwWk; PR = 6 nr.kp vdp; QR - d; eSj i j f; fhz f.

7. KfNfhz tpay;

, U kj gngz ; tpdhffs;

1. $\frac{\sin\theta}{\operatorname{cosec}\theta} + \frac{\cos\theta}{\sec\theta} = 1$ vdw KwnwhUi ki a eWTF.
2. $\cos^2\theta + \sec^2\theta = 2 + \sin\theta$ KwnwhUi ki a MFkh.
3. $\sec^2\theta + \operatorname{cosec}^2\theta = \sec^2\theta \operatorname{cosec}^2\theta$ vdw KwnwhUi ki a eWTF.
4. $\sqrt{\frac{1-\cos\theta}{1+\cos\theta}} = \operatorname{cosec}\theta - \cot\theta$ vdw KwnwhUi ki a eWTF.
5. $\frac{1+\sec\theta}{\sec\theta} = \frac{\sin^2\theta}{1-\cos\theta}$ vd eWTF.
6. $\sqrt{\frac{1-\sin\theta}{1+\sin\theta}} = \sec\theta - \tan\theta$ vd eWTF.
7. $\frac{\sin\theta}{1-\cos\theta} = \operatorname{cosec}\theta + \cot\theta$ vd eWTF.
8. $\frac{\cos\theta}{\sec\theta - \tan\theta} = 1 + \sin\theta$ vd eWTF.
9. $\sqrt{\sec^2\theta + \operatorname{cosec}^2\theta} = \tan\theta + \cot\theta$ vd eWTF.
10. $\sec\theta(1 - \sin\theta)(\sec\theta + \tan\theta) = 1$ vd eWTF.
11. $\frac{\sin\theta - 2\sin^3\theta}{2\cos^3\theta - \cos\theta} = \tan\theta$ vdw KwnwhUi ki a eWTF.
12. $\frac{1+\sec\theta}{\sec\theta} = \frac{\sin^2\theta}{1-\cos\theta}$ vd eWTF.
13. $(\sin^6\theta + \cos^6\theta) = 1 - 3\sin^2\theta\cos^2\theta$ vd eWTF.
14. $x = 5\sin\theta, y = 4\cos\theta$ vdy; $\frac{x^2}{25} + \frac{y^2}{16} = 1$ vdf; fhl LF.
15. Rtu; rhaj J i tffggll Xu; Vz pahdJ ji uAl d; 60° Nfhz j j j VwgLj J fWJ.> Vz pãpd; mb RtwWpUeJ 3.5 kP J}uj j py; c ssJ vdy; Vz pãpd; eSj i j f;fhz f.
16. 30 kP eSkss xU fkgj j pd; epy; eSk; 10√3 kP vdy; Rãpd; Vwwf; Nfhz j j pd; (j i u kl j j pyUeJ Vwwf; Nfhz k) mstpi df; fhz f.
17. xU NfhGuj j pd; mbapyUeJ 30√3 kP nj hi yty; epwFkxU ghui tahsu; mfNfhGuj j pd; c rrpãpi d30°; Vwwf; Nfhz j j py; fhz f;whu; j i u kl j j pyUeJ mtUi la fpi l epi yg; ghui tFNfhl bwF c ss J}uk; 1.5 kP vdy; NfhGuj j pd; cauj j j f; fhz f.
18. xU Ri k Cuj pãpyUeJ Ri ki a , wff VJ thf 30° Vwwf; Nfhz j j py; xU rha;Tj ; j sk; c ssJ. rha;Tj ; j sj j pd; c rrp j i uapyUeJ 0.9 kP cauj j py c ssJ vdy; rha;Tj ; j sj j pd; eSk; ahJ.
19. cauk; 150 nr.kP c ss xU rãWk xU tpsfFF; fkgj j pd; Kd; epdwthW 150√3 nr.kP eSkss epi y VwgLj J fWhs; vdy; tpsfFF; fkgj j pd; c rrpãpd; Vwwf; Nfhz j j j fhz ;
20. 40 nr.kP eSkss xU CryhdJ > xU KO mi stpd; NghJ > mj d; c rrpãpy; 60° Nfhz j j j VwgLj J fWJ. mej mi yty; Cry; Fz bd; J tff epi yfFk > , Wj p epi yfFk; , i l Na c ss kpfFFi wej J}uj j j f; fhz f.

I eJ kj gngz ; tpdhffs;

1. NeufFj j hd xU kuj j pd; Nkyghfk; fhwwpdhy; KwpeJ > mk; Kwpej gFj p fNo tãOe; J tã hky > kuj j pd; c rrp j i uAl d; 30° Nfhz j j j VwgLj J fWJ. kuj j pd; c rrp mj d; mbapyUeJ 30 kP nj hi yty; j i ui aj; nj hL fWJ vdy; kuj j pd; KO cauj j j f;fhz f
2. 200 mb caukss fyqfi u tpsf;fj j pd; c rrpãpyUeJ > mj d; fhgghsu; xU Nj hz p kwWk; xU gl F Mfãtwi w ghuf;fwhu; fyqfi u tpsf;fj j pd; mb > Nj hz p kwWk; gl F

Mfjatiw; w ghhf;fwvh; fyqfi u tpsf;fjjpd; mb> Njhz p kwWk; xU gl F Mfjad xNu jpi rapy; xNu NehfNfhlby; mi kfpdwd. Njhz p kwWk; gl F Mfjatwwpd; , wfff; Nfhz qfs; Ki wNa 45° kwWk; 30° vdf. , t;tpuz Lk; ghJ fhgghf , Uff Ntz Lnkdp> mi tS fF , i lggli J}uk; Fi wej J 300 mbahf , Uff Ntz Lk; , i lntsp Fi wej hy; fhgghsu; vrrupfi f xyp vOgg Ntz Lk; mtu; vrrupfi f xyp vOgg Ntz Lkh?

3. xU NfhGujjpd; mbapylUeJ xU Fdwpd; crrpdpd; VwwfNfhz k; 60° vdf. Fdwpd; mbapylUeJ NfhGujjpd; crrpdpd; VwwfNfhz k; 30°kwWk; NfhGujjpd; c auk; 50kP vdp> Fdwpd; caujijf; fhz f.
4. 60 kP cauKss xU NfhGujjpylUeJ xU flbljjpd; crrp kwWk; mb Mfjatwwpd; , wff Nfhz qfs; Ki wNa 30° kwWk; 60° vdp>flbljjpd; caujijf; fhz f.
5. 40 kP cauKss xU NfhGujjpd; crrp kwWk; mb MfjatwwpylUeJ xU fyqfi u tpsf;fpd; crrpdpd; Vwwf; Nfhz qfs; Ki wNa 30° kwWk; 60° vdp> fyqfi u tpsf;fjjpd; caujijf; fhz f. NKYk> fyqfi u tpsf;fpd; crrpdpd; NfhGujjpd; mbfF css J}ujijAk; fhz f.
6. xU nrqFjjhd RtUk> xU NfhGuKk; xU Fwggli , i lntsp; cssd. NfhGujjpd; crrpdpd; ghuf;FkNghJ> Rtwwpd; crrp kwWk; mb Mfjatwwpd; , wfff; Nfhz qfs; Ki wNa 45° kwWk; 60° MFk; NfhGujjpd; c auk; 90 kP vdp> Rtwwpd; caujijf; fhz f.($\sqrt{3} = 1.732$)
7. xU flbljjpd; Nky; xU nfhbf;fkgk; epwfwJ. jiuapYss xU GsspylUeJ nfhbf;fkgjjpd; crrp kwWk; mb Mfjatwwpd; VwwfNfhz qfs; Ki wNa 60° kwWk; 45° vdf. NKYk; nfhbf; fkgjjpd; c auk; 10kP vdp> flbljjpd; caujijf; fhz f. ($\sqrt{3} = 1.732$)
8. xdWfnhdW Neu; vjphf css , U kuqfspd; kU A,B vdw , U fhfi ffs; 15kP kwWk; 10kP cauqfs; mkueJfnfhz bUf;fpdwd. mitjiuapylUf;Fk; xU tilapi d Ki wNa 45° kwWk; 60° , wfff; Nfhz jjpy; ghuf;fpdwd. mit xNu Neujjpy; f;skgp; Fi wthd eSKss ghi japy; rkNtfjjpy; gweJ > mt;tilia vLff Kawrrijhy; vej gwi t ntwwp ngWk?
9. 700 kP cauujjpy; gweJf; nfhz bUf;Fk; xU ntwyf;hgl upy; , UeJ xUtu; Xu; Mwwpd; , U fi ufs; Nenuj phf css , U nghUifi s 30°> 45° , wfffNfhz qfs; fhz f;pw; vdp> Mwwpd; mfyjijf; fhz f. ($\sqrt{3} = 1.732$)
10. tFggi wapy; mkueJfnfhz bUf;Fk; xU khz td; fUkgyi fapy; fpi lepi yg; ghui tf; NfhlbylUeJ 1.5 kP cauujjpy; css Xtpajij 30° Vwwf; Nfhz jjpy; fhz f;pwhd; Xtpak; mtDfFj; nj spthf nj upahjhy; Neuhff; fUkgyi fi a Nehf;fp efueJ kL Lk; mej Xtpajij 45° VwwfNfhz jjpy; nj spthff; fhz f;pwhd; vdp> mtd; efueJ J}ujijf; fhz f.
11. xU rpwtd; 30 kP cauKss flbljjpwF vjNu Fwggli J}ujjpy; epwfwhd; mtDilaf; fpi lepi yg; ghui tfNfhl jiu kljjpylUeJ 1.5 kP cauujjpy; cssJ. mtd; flbljij Nehf;fp eleJ nry;YkNghJ> mf;flbljjpd; crrpdpd; VwwfNfhz k; 30° pylUeJ 60° MfcaufpwJ. mtd; flbljij Nehf;fp eleJ nrdw; J}ujijf; fhz f.

8. mstpay;

, U kj gngz ; tpdhfs;

1. xU j p z k Neu; t l l c Ui sapd; Muk; 7 nr.kp kwWk; c auk; 20 nr.kp vdy; mj d; ti sgugG kwWk; nkhj j gugG fhz f.
2. xU j p z k Neu; t l l c Ui sapd; nkhj j g; GwggugG 880 r.nr.kp kwWk; mj d; Muk; 10 nr.kp vdy> mt;TUi sapd; ti sgugi gf; fhz f. $\pi = \frac{22}{7}$
3. xU j p z k Neu; t l l c Ui sapd; nkhj j g; GwggugG 660 r.nr.kp kwWk; mj d; t p l k; 14 nr.kp vdy> mt;TUi sapd; c auj i j Ak> ti sgugi gf; fhz f.
4. , uz l Neu; t l l c Ui sapd; Muqfspd; t p f j k; 3:2 vdf. mj d; c auqfspd; t p f j k; 5:3 vdy> mtwvpd; ti sgugG fspd; t p f j k; fhz f.
5. xU j p z k Neu; t l l c Ui sapd; ti sgugG kwWk; mbrRwvST Ki wNa 4400 r.nr.kp kwWk; 110 nr.kp vdy; mt;TUi sapd; c auj i j Ak> t p l j j Ak; fhz f.
6. xU c s s l w w c Ui sapd; c s; kwWk; ntsp Muqfs; Ki wNa 12nr.kp kwWk; 18nr.kp vdf. NkYk> mj d; c auk; 14nr.kp vdy; mt;TUi sapd; ti sgugG kwWknkhj j gGwggugi gf; fhz f. $\pi = \frac{22}{7}$
7. xU c s s l w w c Ui sapd; ntsgGw ti sgugG 540 π r.nr.kp mj d; c s; t p l k; 16 nr.kp kwWk; c auk; 15 nr.kp vdy; m f f o h a p d; nkhj j g; Gwggugi gf; fhz f.
8. xU j p z k Neu; t l l f; \$kgpd; Muk; kwWk; rhAuk; Ki wNa 35nr.kp 37 nr.kp vdy; mj d; ti sgugG kwWk; nkhj j g; Gwggugi gf; fhz f.
9. xU j p z k Neu; t l l f; \$kgpd; Muk; kwWk; c auk; Ki wNa 7 nr.kp kwWk; 24 nr.kp vdy; mj d; ti sgugG kwWk; nkhj j g; Gwggugi gf; fhz f.
10. xU j p z k Neh; t l l c Ui sapd; Muk; 14 nr.kp kwWk; c auk; 8 nr.kp vdy> mj d; ti sgugi gf; fhz f.
11. xU j p z k Neu; t l l f; \$kgpd; c r r p f N f h z k; kwWk; Muk; Ki wNa 60⁰ kwWk; 15 nr.kp vdy; mj d; c auk; kwWk; rhAuk; fhz f.
12. xU j p z k Neu; t l l f; \$kgpd; mbrRwvST 236 nr.kp kwWk; mj d; rhAuk; 12 nr.kp vdy; mj d; ti sgugi g fhz f.
13. newFtpai y ki oapyl e; J ghJ fhff f j j h d; J z p a h y; k p f r r u p a h f % l g g l f w J v d y; N j i t a h d f j j h d; J z p a p d; g u g i g f; f h z f.
14. xU Neu; t l l f; \$kgpd; MuKk; rhAauKk; 3:5 v d w t p f j j j y; c s s d. m f \$ k g p d; ti sgugG 60 π r.nr.kp vdy; mj d; nkhj j ggugi gf; fhz f.
15. xU j p z k mi u f N f h s j j p d; nkhj j GwggugG 675 π r.nr.kp vdy; mj d; ti sgugi gf; fhz f.
16. 98.56 r.nr.kp GwggugG nfhz l xU j p z k N f h s j j p d; M u j i j f f h z f.
17. xU j p z k mi u f N f h s j j p d; ti sgugG 2772r.nr.kp v d y m j d n k h j j G w g g u g i g f h z ;
18. xU c s s l w w mi u f N f h s j j p d; ntsp Muk; kwWk c s; Muk; Ki wNa 4.2 nr.kp kwWk; 2.1 nr.kp vdy; mj d; ti sgugG kwWk; nkhj j g; Gwggugi gf; fhz f
19. mi u f h s t b t y h d N k w \$ i u a p d; c l G w ti sguggwF t z z k; G r N t z b A s s J. mj d; c l G w m b r R w v S T 17.6kp v d y > x U r J u k l l U f F & . 5 t j k; M F k; n k h j j n r y t p i d f; f h z f.
20. Neu; t l l c Ui sapd; ti sgugG 704 r.nr.kp kwWk; mj d; c auk; 8 nr.kp vdy; mt;TUi sapd; fd msi t y l l u y; fhz f.
21. xU j p z k c Ui sapd; Muk; 14 nr.kp kwWk; mj d; c auk; 30 nr.kp vdy; mt;TUi sapd; fd msi t fhz f.
22. , uz l Neu; t l l c Ui sapd; Muqfspd; t p f j k; 2:3 vdf. mj d; c auqfspd; t p f j k; 5:3 vdy> mtwvpd; fd m s T f s p d; t p f j k; fhz f.
23. xU c Ui sapd; Muk; kwWk; c auj j p d; t p f j k; 2:3 . N k Y k; mj d; fd m s T 4400 f . n r . k p v d y; mt;TUi sapd; M u j i j f; fhz f.
24. 66 nr.kp X 12 nr.kp v D k; m s T n f h z l x U c N y h f j f l b i d 12 nr.kp c a u K s s x U c U i s a h f k h w w p d h y; f j l f F k; c U i s a p d; f d m s i t f; fhz f.
25. xU Neu; t l l f; \$kgpd; fd m s T 216 π f . n r . k p k w W k; m f \$ k g p d; Muk; 9 nr.kp vdy; mj d; c a u j i j f; fhz f.
26. xU j p z k f; \$kgpd; Muk; kwWk; rhAuk; Ki wNa 20 nr.kp kwWk; 29 nr.kp vdy; mj j p z k \$kgpd; fd msi t f; fhz f.
27. k u j j p d h y h d x U j p z k \$ k g p d; m b r R w v S T 44kp kwWk; mj d; c auk; 12kp mj j p z k \$kgpd; fd msi t f; fhz f
28. xU Neu; t l l f; \$kgpd; fd m s T 216 π f . n r . k p k w W k; m f \$ k g p d; Muk; 9 nr.kp vdy; mj d; c a u j i j f; fhz f.
29. xU c s s l w w N f h s j j p d; c s; kwWk; ntsp Muqfs; Ki wNa 12 nr.kp kwWk; 10 nr.kp vdy; m f N f h s j j p d; f d m s i t f; fhz f.
30. xU mi u N f h s j j p d; f d m s T 1152 π f . n r . k p v d y > m j d; ti sgugGf; fhz f.

31. 20 nr.kp gff mst nfhz ; xU fd rUjjjy ; , UeJ ntlbnaLffggLk; kpfngupa \$kgpd; fd msi tf; fhz f.

I eJ kj gngz ; tpdhfs;

1. xU csslwv , UKGf; Fohapd; eSk; 28 nr.kp mj d; ntsr kwWk; cs; tpi qfs; Ki wNa 8 nr.kpwWk; 6 nr.kp vdy; , UKGf; Fohapd; fd mstpi df; fhz f. NKYk; 1 f.nr.kp , Ukgpd; vi l 7 fphk; vdy; mf;Fohapd; vi li af; fhz f. $\pi = \frac{22}{7}$
2. xU jzk cUi sapd; mbggffg; gugG kwWk; fd mst Ki wNa 13.86 r.nr.kp kwWk; 69.3 f.nr.kp mj d; cauk; kwWk; ti sgugi gf; fhz f.
3. xU , ilffz l tbttyhd thsapid; NkwGw Muk; 15 nr.kp mbggffjjpd; Muk; 8 nr.kp NKYk; Mok; 63 nr.kp vdy; thsapid; nfhssti tf; fhz f. $\pi = \frac{22}{7}$
4. xU ghjjuk ; , ilffz l tbtty; cssJ. mj d; NkwGw Muk; kwWk; cauk; Ki wNa 8 nr.kp kwWk; 14nr.kp vdf. mgghjjjjpd; fd mst $\frac{5676}{3}$ f.nr.kp vdy; mbggffjjjYss tlljjpd; Mujji df;fhz f.
5. xU Neu; tllf; \$kgpd; , ilffz ljjpd; , UGwKk; mi kej tll tpskGfspd; RwwSTfs; Ki wNa 44 nr.kpwWk; 8.4π nr.kp vdf. mj d; cauk; 14 nr.kp vdy; mt;tpi lffz ljjpd; fd msi tf; fhz f.
6. xU jzk kugnghki k mi uNFhsjjpd; Nky; \$kG i tjj tbtty; cssJ. mi uNFhsk; kwWk; \$kG Mfjatwvvd; Muk; 3.5 nr.kp NKYk; nghki kapd; nkhhj cauk; 17.5 nr.kp vdy; mgngghki k jahuffgadglljjggll kujjpd; fd mst fhz f.
7. xU tpi sahl l gkgukhdJ \$kgpdKv mi uNFhsk; , iz ej tbtty; cssJ. mi uNFhsjjpd; tpi k; 3.6 nr.kp kwWk; gkgujjpd; nkhhj cauk; 4.2 nr.kp vdy; mj d; nkhhj Gwggugi gf; fhz f.
8. xU Nfghi gahdJ mi uNFhsjjpd; kU cUi s , iz ej tbtty; cssJ. cUi sg; gFjapid; cauk; 8 nr.kp kwWk; Nfghi gapd; nkhhj cauk; 11.5 nr.kp vdy; mfNFghi gapd; nkhhj Gwggugi gf; fhz f.
9. xU fd cUtkhdJ mi uNFhsjjpd; kU cUi s , iz ej tbtty; cssJ. cUi sggFjapid; tpi k; kwWk; nkhhj cauk; 21 nr.kp kwWk 25.5 nr.kp vdy; mj d; fd msi tf; fhz f
10. xU ruffj ; \$l hukhdJ cUi sapd; kU \$kG mi kej hwNghdw tbtYssJ. \$l hujjpd; nkhhj cauk; 49 kp mj d; mbggff tpi k; 42 kb cUi s ghfjjpd; cauk; 21kp NKYk; 1r.kp fjjjhd; Jzapid; tpi y &.12.50 vdy; mf;\$lhuk; mi kffj; Nji tahd fjjjhd; Jzapid; tpi yi af; fz fplf $\pi = \frac{22}{7}$
11. xU kUeJ FggahdJ cUi sapd; , UGwKk; mi uNFhsk; mi kej J Nghdw tbtty; cssJ. mj d; nkhhj eSk; 14 kkp cUi sapd; tpi k; 5 kkp khjjpi uf; Fggapid; GwggugG fhz f.
12. xU \$l hukhdJ cUi sapd; kU \$kG mi kej hwNghdw tbtYssJ. \$l hujjpd; nkhhj cauk; 13.5 kp mj d; tpi k; 28kb NKYk; cUi s ghfjjpd; cauk; 3kp \$l hujjpd; nkhhj Gwggugi gf; fhz f.
13. 7 nr.kp tpi kss xU cUi s tbt Kfi tapy; rpwj st jzz b; cssJ. mj py; xtnthdWk; 1.4 nr.kp tpi kss rpy Nfhs tbt gspqF fwfs; Nghl ggLfpdwd. jzz bpd; cauk; 5.6 nr.kp mj pfupff vjji d gspqF fwfi s Nghl Ntz lK;
14. rpwj st jzz b; epugggll 12 nr.kp tpi kss xU cUi s tbt ghjjjjjy; 6 nr.kp tpi kss xU jzk Nfhsjjpi d KOTJkhf %ofr; nraj hy; ghjjjjjy; cauej ekl ljjpd; caujjj fhz f.
15. 5 nr.kp cs; tll MuKk; 24 nr.kp cauKk; nfhz l \$kG tbt ghjjjjjy; KO mstpy; jzz b; cssJ. , jzz bhdJ 10 nr.kp cs; MuKss cUi s tbt fhyp ghjjjjjpwF khwwggLk; NghJ mgghjjjjjy; css jzz b; kljjjjpd; caujjjf; fhz f.
16. 4.4nr.kp eSkk; 2kp mfyKk; nfhz l xU fdr; nrttf tbtj; njhl bapy; ki oel; NrfupffggLfwJ. , jnjhl bapy; 4nr.kp caujjjpwF Nrfupffggll ki o elhdJ 40 nr.kp MuKss cUi s tbt fhyp ghjjjjjpwF khwwggLk; NghJ mgghjjjjjy; css jzz b; kljjjjpd; caujjjf; fhz f.
17. 8 nr.kp tpi kK; 12 nr.kp cauKk; nfhz l xU Neu; tll jzk tbt , UKG \$kghdJ cUffggll 4 kkp MuKss jzk kf; Nfhs tbt Fz l fshf thuffggllhy; fpi l fFk; Nfhs tbt Fz l fspd; vzz pfi f fhz f.
18. 12 nr.kp tpi kK; 15 nr.kp cauKk; nfhz l xU Neu; tll cUi s KOTJk; gdpf;\$opdhy; (ice cream) epugggllssJ ., ggdppf;\$ohdJ 6 nr..kp tpi kK; 12 nr..kp cauKk; nfhz l NkwGwk;

- mi uNfhsK; , i z ej tbtÿi kej \$kgÿ; epggggLfÿJ. vjji d \$kGfsÿ; gdrf\$oji d KOTJkhf epggÿhk?..
19. fsÿkz zÿi d gadgLjÿÿ xU khz td; 48 nr.kÿ c auKk> 12 nr.kÿ MuKk; nfhz ÿ Neu; tÿl; jÿz kf; \$ki gr; nraj hu; mf;\$ki g kwnwhU khz tu; xU jÿz k Nfshkhf khwwÿdhu; mt;thW mi kffggÿl ÿ Gjÿ Nfhsjÿÿ; Muj i j f; fhz f.
 20. 18 nr.kÿ MuKss jÿz k cNyhf NfshkhJ cUffggÿL %dW rÿÿÿ nttNtW mSTss Nfhsqfshf thuffggLfÿJ. mt;thW thuffggÿl , uz ÿ jÿz k Nfhsqfspd; Muq;fs; Ki wNa 2 nr.kÿ kwWk; 12 nr.kÿ vdÿ; %dwhTJ Nfhsjÿÿ; Muj i j f; fhz f.
 21. 24 nr.kÿ MuKss jÿz k cNyhf NfshkhJ cUffggÿL 1.2 kÿkÿ MuKss rÿhd cUi s fkgÿahf khwwggÿlÿhy; fkgÿÿ; eSj i j f; fhz f.
 22. xU cssÿÿÿ cUi s tbt Fohÿ; eSk; 40 nr.kÿ > mj d; c s; kwWk; ntsÿ Muq;fs; Ki wNa 4 nr.kÿ kwWk; 12 nr.kÿ . mt;Tsÿÿÿ cUi s Foha; cUffggÿL 20 nr.kÿ eSkss jÿz k cUi sah f khwwg; glÿÿhy; fÿi l fFk; Gjÿÿ cUi sapd; Muj i j f; fhz f.
 23. kz yhy; epggggÿl xU cUi s tbt thsÿÿ; c auk; 32 nr.kÿ kwWk; Muk; 18 nr.kÿ mkkz y; KOTJk; j i uÿÿ; xU Neu;tÿl; \$kG tbtÿ; nfhlÿggLfÿJ. mt;thW nfhlÿggÿl kz w\$kgÿ; c auk; 24 nr.kÿ vdÿ; mf;\$kgÿ; Muk; kwWk; rhAauk; fhz f.
 24. 14 kÿ tÿlÿKk; 20 kÿ MoKk; css xU fÿz W cUi s tbtÿ; ntÿlÿggLfÿJ. mt;thW ntÿlÿkNghJ Nj hz bnaLfÿggÿl kz ; rÿhf guggggÿL 20kÿ X 14kÿ mSTfsÿ; mbggffk; nfhz ÿ xU Nki lah f mi kffggÿlÿhy> mkNki lÿÿ; c auk; fhz f.

9.nraKi w tbtay;

1. 3.2 nr.kP MuKss xU tlik; ti ueJ mt;tlijjpd; Nky; VNj Dk; xU Gsspi a Fwfff. tlijjpd; i kajij gadgLjpp mgGssp toNa nj hLNfhL ti uf.
2. 4.2 nr.kP MuKss xU tlik; ti uf. mt;tlijjpd; Nky; P vdw VNj Dk; xU Gsspi a Fwfff. mgGssp toNa nj hLNfhL ti uf. (tlijjpd; i kajij gadgLjpf)
3. 3.2 nr.kP MuKss xU tlik; ti uf. mt;tlijjpd; Nky; P vdw VNj Dk; xU Gsspi a Fwfff. nj hLNfhL – ehz ; Nj wwjijg; gadgLjpp mgGssp toNa nj hLNfhL ti uf.
4. 4.8 nr.kP MuKss xU tlik; ti uf. mt;tlijjpd; Nky; P vdw VNj Dk; xU Gsspi a Fwfff. nj hLNfhL – ehz ; Nj wwjijg; gadgLjpp mgGssp toNa nj hLNfhL ti uf.
5. 3 nr.kP MuKss xU tlik; ti ueJ mj d; i kajjpyUeJ 7 nr.kP nj hi yty; xU Gsspi a Fwfff. mgGsspyUeJ tlijjpwF nj hLNfhLfs; ti ueJ mj d; eSqfi s fz fflf.
6. 6 nr.kP MuKss xU tlik; ti ueJ mj d; i kajjpyUeJ 10 nr.kP nj hi yty; xU Gsspi a Fwfff. mgGsspyUeJ tlijjpwF nj hLNfhLfs; ti ueJ mj d; eSqfi s fz fflf.
7. 10 nr.kP tlikss xU tlik; ti ueJ mj d; i kajjpyUeJ 13 nr.kP nj hi yty; P vdw Gsspi a Fwfff. mgGsspyUeJ tlijjpwF PA kwWk; PB vdw nj hLNfhLfs; ti ueJ mj d; eSqfi s fz fflf.
8. 3 nr.kP MuKss xU tlik; ti ueJ mj d; i kajjpyUeJ 9 nr.kP nj hi yty; xU Gsspi af; Fwfff. mgGsspyUeJ tlijjpwF nj hLNfhLfs; ti ueJ> mj d; eSqfi s fz fflf.
9. AB = 6 nr.kP $\angle C = 40^\circ$ kwWk; crrp C - apyUeJ AB – fF ti uaggl J Fj J fNfhL bd; eSk; 4.2 nr.kP nfhz J ΔABC ti uf.
10. PQ = 6 nr.kP $\angle R = 60^\circ$ kwWk; crrp R - apyUeJ PQ – fF ti uaggl J Fj J fNfhL bd; eSk; 4 nr.kP nfhz J ΔPQR ti uf.
11. PQ = 4 nr.kP $\angle R = 25^\circ$ kwWk; crrp R - apyUeJ PQ – fF ti uaggl J Fj J fNfhL bd; eSk; 4.5 nr.kP nfhz J ΔPQR ti uf.
12. mbgf; BC = 5.5 nr.kP $\angle A = 60^\circ$ kwWk; crrp A - apyUeJ ti uaggl J eLfnfhL AM – d; eSk; 4.5 nr.kP nfhz J ΔABC ti uf.
13. ΔABC -apy; BC = 5 nr.kP $\angle A = 45^\circ$ kwWk; crrp A - apyUeJ BC fF ti uaggl J eLfnfhL bd; eSk; 4 nr.kP nfhz J ΔABC ti uf.
14. BC = 5 nr.kP $\angle BAC = 40^\circ$ kwWk; crrp A - apyUeJ BC – fF ti uaggl J eLfnfhL bd; eSk; 6 nr.kP vdw msTfs; nfhz J ΔABC ti uf. Nky; crrp A - apyUeJ ti uaggl J Fj J f; NfhL bd; eSk; fhz f.
15. AB = 6 nr.kP AC = 7 nr.kP BC = 6 nr.kP kwWk; AD = 4.2 nr.kP msTfs; nfhz J tli ehwfuk; ABCD ti uf.
16. AB = 6 nr.kP AD = 4.8 nr.kP BD = 8 nr.kP kwWk; CD = 5.5 nr.kP msTfs; nfhz J tli ehwfuk; ABCD ti uf.
17. PQ = 4 nr.kP QR = 6 nr.kP PR = 7.5 nr.kP kwWk; QS = 7 nr.kP msTfs; nfhz J tli ehwfuk; PQRS ti uf.
18. AB = 6 nr.kP BC = 5.5 nr.kP $\angle ABC = 80^\circ$ kwWk; AD = 4.5 nr.kP msTfs; nfhz J tli ehwfuk; ABCD ti uf.
19. EF = 5.2 nr.kP $\angle GEF = 50^\circ$, FG = 6 nr.kP kwWk; $\angle EGH = 40^\circ$; vdw msTfs; nfhz J tli ehwfuk; EFGH ti uf.
20. PQ = 4 nr.kP $\angle P = 100^\circ$, $\angle PQS = 40^\circ$; kwWk; $\angle SQR = 70^\circ$; vdw msTfs; nfhz J tli ehwfuk; PQRS ti uf.
21. AB = 5.8 nr.kP $\angle ABD = 35^\circ$, AD = 4.2 nr.kP kwWk; AB || CD vdw msTfs; nfhz J tli ehwfuk; ABCD ti uf.
22. AB = 5.5 nr.kP $\angle ABC = 50^\circ$, $\angle BAC = 60^\circ$, kwWk; $\angle ACD = 30^\circ$; vdw msTfs; nfhz J tli ehwfuk; ABCD ti uf.

10. ti ugl qfs; vi tNaDk; xdwDff klLk; tpi l asp (10 kj gngz fs)

1. $y=2x^2-x+3$ - d; ti ugl k; ti uf.
2. $x^2-2x-3=0$ - i a ti ugl k; %yk; j hff.
3. $2x^2+x-6=0$ - i a ti ugl k; %yk; j hff.
4. $(x-5)(x-1)=0$ - i a ti ugl k; %yk; j hff.
5. $y=2x^2 - d$; ti ugl k; ti ue;J mj pyUe;J $2x^2+x-6=0$ vdw rkdghl i l j hff.
6. $y=2x^2+x-6 - d$; ti ugl k; ti ue;J mj pyUe;J $2x^2+x-10=0$ vdw rkdghl i l j hff.
7. $y=x^2+2x-3 - d$; ti ugl k; ti ue;J mj pyUe;J $x^2-x-6=0$ vdw rkdghl i l j hff.
8. $y=x^2+3x+2 - d$; ti ugl k; ti ue;J mj pyUe;J $x^2+2x+4=0$ vdw rkdghl i l j hff.
9. $y=x^2-x-8 - d$; ti ugl k; ti ue;J mj pyUe;J $x^2 - 2x-15=0$ vdw rkdghl i l j hff.
10. $y=x^2+x-12 - d$; ti ugl k; ti ue;J mj pyUe;J $x^2 + 2x+2=0$ vdw rkdghl i l j hff.
11. $y=x^2 - d$; ti ugl k; ti ue;J mj pyUe;J $x^2 -4x-5=0$ vdw rkdghl i l j hff.
12. fbffhZ k; ml i ti z fF j Fej ti ugl k; ti ue;J khwffspd; khWghlLj; j di ki af; fhz ;

x	2	3	5	8	10
y	8	12	20	32	40

NkYk; $x=4$ vdy; $y - d$; kj igi gf; fhz f.

13. thqfggl NehlLg; Gj j fqfspd; vz z pfi f kwWk; mj wfhd tpi y tptuk; j uggLssJ.

NehlLg; Gj j fqfspd; vz z pfi f x	2	4	6	8	10	12
tpi y & y	30	60	90	120	150	180

, j wfhd ti ugl k; ti ue;J mj d; %yk; (i) VO NehlLg j fqfspd; tpi yi af; fhz f.

(ii) & 165 - fF thqfggLk; NehlLg; Gj j fqfspd; vz z pfi ff; fhz f.

14. fbffhZ k; ml i ti z fF j Fej ti ugl k; ti ue;J > mj d; %yk;

(i) $x=4$ vdy; $y - d$; kj igi gf; fhz f.

(ii) $y=12$ vdy; $x - d$; kj igi gf; fhz f.

x	1	3	5	7	8
y	2	6	10	14	16

- 15.

Nti yahl fspd; vz z pfi f x	3	4	6	8	9	16
ehl fspd; vz z pfi f y	96	72	48	36	32	18

ml i ti z apy; nfhLf fggLss tptuj j wfhd ti ugl k; ti uf. mj d;%yk; 12 Nti yahl fs; mtNti yi a KOtJkhf nraJ Kbff MFk; ehl fspd; vz z pfi fi af; fhz f.

16. $xy=20$, $x,y>0$ vdgi d; ti ugl k; ti uf. mi j gadgLj j p

(i) $x=5$ vdy; $y - d$; kj igi gAk;

(ii) $y=10$ vdy; $x - d$; kj igi gAk; fhz f.

17. xU tqfp %j j fFbkfdpd; i tgGj nj hi fff 10% j dptl b j UfpuJ. i tgGj nj hi fffk; mj wF Xh; Mz LfFF; fpi l fFk; tlb fFk; , i l Naahd nj hl hgi df; fhl xU ti ugl k; ti uf. mj d; %yk;

a) & 650 i tgGj; nj hi fff fpi l fFk; tlb kwWk;

b) & 45 tlbahf fpi l fff tqfapy; nrYj j ggl Ntz ba i tgGj nj hi f Mfpatdtwi wf; fhz f

18. xU NgUe;J 40fpp Ntfj j py; nryfpuJ., j wfha J)u-fhy nj hl hgwfhd ti ugl k; ti uf. , i j g; gadgLj j p 3 kz pNeuj j py; , gNgUe;J gaz j j j; J)uj j j f; fz Lgp.

19. xU ypl h; ghypd; tpi y &15 vdf. ghypd; mStffk; tpi yfFk; c ssj nj hl hgi df; fhl Lk; ti ugl k; ti uf. Mj i dg; gadgLj j p

a) tpi rk khwpyi af; fhz f.

b) 3 ypl h; ghypd; tpi yi af; fhz f.

20. xU kj p tz b XlLgth A vdw , l j j pyUe;J B vdw , l j j puF xU rlbhd Ntfj j py; xNu topay; nttNtW ehl fspy; gaz k; nrafpuh; mth; gaz k; nraj Ntfk; mj J)uj j pi d fl ff vLj Jf; nfhz j Neuk; Mfpatdtwi wg; gwwpa tptuqfs; (Ntf - fhy) gdtUk; ml i ti z apy; nfhLf fggLssd.

Ntfk; (fpkp / kz p) x	2	4	6	10	12
Neuk; (kz papy) y	60	30	20	12	10

Ntf - fhy ti ugl k; ti ueJ mj pyUeJ

(i) mth; kz pff 5 fpkp Ntfjj py; nrdwhy; J}uj i j f; fl fff MFk; gaz Neuk;

(ii) mth; , f;Fwggll J}uj i j 40 kz p Neuj j py; fl fff vej Ntfjj py; gaz pff Ntz Lk;

11. Gsspapay; , U kj gngz ; tpdhffs;

- 43,24,38,56,22,39,45 vdw tptuqfspd; tRr kwWk; tRrfnfO fhz f.
- 59,46,30,23,27,40,52,35,29 vdw tptuqfspd; tRr kwWk; tRrfnfO fhz f.
- xU tptuj nj hFggpd; kbngU kj gg 7.44 kwWk; mj d; tRr 2.26 vdy> mj nj hFggpd; kRrW kj ggi gffhz f.
- xU Gssp tptuj jpd; kRrW kj gg 12 kwWk; mj d; tRr 59 vdy> mj nj hFggpd; kbngU kj ggi gffhz f.
- xU tptuj nj hFggpd; kbngU kj gg 3.84 fRfR kwWk; mj d; tRr 0.46 fRfR vdy> mj nj hFggpd; kRrW kj ggi gffhz f.
- Kj y; n , ay; vz fspd; j pl tpyffk; $\sqrt{\frac{n^2-1}{12}}$ vd epWTF..
- Kj y; 10 , ay; vz fspd; j pl tpyffk; fhz f.
- Kj y; 13 , ay; vz fspd; j pl tpyffk; fhz f.
- fz l wpej Gssp tptuj nj hFggYss 20 kj ggGfspd; j pl tpyffk; $\sqrt{5}$ vdf. gssp tptuj jpd; xtntH kj ggi gAk; 2 My; ngUffpdhyfpi l fFk; Gj paGssp tptuqfspd; j pl tpyffk; kwWk; tpyff tuff ruhru fhz f.
- xU Gssp tptuj jpy; 30 kj ggGfspd; \$l ruhru kwWk; j pl tpyffk; Ki wNa 18 kwWk; 3 MfK; mtwWpd; \$l Lj nj hi fi aAk> NkYk; mtwWpd; tuffqfspd; \$l Lj nj hi fi aAk; fhz f.
- xU Gssp tptuj jpy; 100 kj ggGfspd; \$l ruhru kwWk; j pl tpyffk; Ki wNa 48 kwWk; 10 MfK; mtwWpd; \$l Lj nj hi fi aAk> NkYk; mtwWpd; tuffqfspd; \$l Lj nj hi fi aAk; fhz f.
- xU Gssptptuj jpd; khWghl LfnfO 57 kwWk; j pl tpyffk; 6.84 vdy; mj d; \$l ruhru af; fhz f.
- xU FOty; Ngu; c ssdu> mtufspd; c auqfspd; \$l Lr; ruhru 163.8 nr.kp kwWk; khWghl LfnfO 3.2 vdy> mtufS i l a c auqfspd; j pl tpyffk; fhz f.
- n=10, \bar{x} = 12, Σx^2 = 1530 vdy; j pl tpyffk; fhz f.
- Σx = 99, n=9, $\Sigma(x-10)^2$ = 79 vdy; Σx^2 kwWk; $\Sigma(x-x)^2$ l fhz f.

I eJ kj gngz ; tpdhffs;

- 10 khz thfs; fz ij ; Nj hty; ngww kj gngz fs; gpd:UkhW> 80>70>50>90>60>100>60>30.80>40. , kkj ggGS fF j pl tpyffk; fhz f.
- xU tFggwF el j j ggl nghJ mwTj Nj uty; nkjhj kj gngz fs; 40 fF khz tufs; ngww kj gngz fs; 20,14,16,30,21 kwWk; 25 vdy; , kkj ggGS fF j pl tpyffk; fhz f.
- 62,58,53,50,63,52,55 Mfpa kj ggGS fF j pl tpyffk; fhz f.
- 10> 20> 15> 8> 3> 4 Mfpa kj ggGS fF j pl tpyffk; fhz f.
- 3,5,6,7 Mfpa kj ggGS fF j pl tpyffk; fhz f.xtntH kj ggDk; 4 l f; \$l l fi l fFk; Gj pa kj ggGS fF j pl tpyffk; fhz f.
- 40,42,48 Mfpa kj ggGS fF j pl tpyffk; fhz f.xtntH kj ggk; 3 My; ngUffggLgkNghJ Gj pa kj ggGS fF j pl tpyffk; fhz f.
- fz ij tpdhb tpdhg; Nghl bary; 48 khz thfs; ngww kj gngz fs; gpd:Uk; ml l ti z apy; j uggLssd.

kj gngz fs; x	6	7	8	9	10	11	12
epfontz fs; f	3	6	9	13	8	5	4

, t:ptuj j wfhd j pl tpyffj j fz fflf.

- gpd:Uk; ml l ti z apy; j uggLss Gssp tptuj j wfhd tpyff thfR; ruhru a fz fflf.

x	70	74	78	82	86	90
f	1	3	5	7	8	12

- fb:ffz l ml l ti z apy; j uggLss Gssp tptuj j wfhd j pl tpyffj j fz fflf.

x	3	8	13	18	23
f	7	10	15	10	8

- c yf fhygeJ Nghl bfsy; 71 Kddz p thfs; mbj j Nfhyfspd; vz z pfi fapd; tptuqfs; gpd:Uk; ml l ti z apy; j uggLssd. , t:ptuj j wfhd j pl tpyffj j fz fflf.

gpT , i l ntsi	0 -10	10-20	20-30	30-40	40-50	50-60	60-70
epfontz fs;	8	12	17	14	9	7	4

- xU ghj rhhp FwFf ghi ji a flff rpyh; vLj Jfnfhz l Neu tptuk; gpd:Uk; ml l ti z apy; j uggLssJ. , t:ptuj j wfhd j pl tpyffk; kwWk; tpyffthff ruhru a fz fflf.

Neuk; (tjdhbapy)	5-10	10-15	15-20	20-25	25-30
eghfspd; vz z pfj f	4	8	15	12	11

12. tll c upi kahsurfs; 45 Ngu; mtufSila nj Utpd; " gRi kr; Røy;" j pl ljj w/fhf ejj p msjj du; tRyppfggl ejj nj nj hi f tptuk; gpd;tUkhW:

nj hi f	0-20	20-40	40-60	60-80	80-100
tll c upi kahsurfs; vz z pfj f	2	7	12	19	5

13. gpd;tUk; kj jgGfspd; khWgghl Lf; nfOi t fhz f. 20> 18> 32> 24> 26.
14. $\sum x = 99$, $n = 9$ kwWk; $\sum (x - 10)^2 = 79$ vdpj; $\sum x^2$ kwWk; $\sum (x - \bar{x})^2$ Mfpatwi w fhz f.
15. xU Gssp tptuj; nj hFggj; $\sum x = 35$, $n = 5$ kwWk; $\sum (x - 9)^2 = 82$ vdpj; $\sum x^2$ kwWk; $\sum (x - \bar{x})^2$ Mfpatwi w fhz f.
16. xU Gssp tptuj j py; 30 kj jgGfspd; \$l Lr; ruhrhp kwWk; j pl tpyffk; Ki wNa 18 kwWk; 3 MFk; mtwwpd; \$l Lj nj hi fi aAk> NkYk; mtwwpd; thf;fqfspd; \$l Lj nj hi fi aAk; fhz f.

12. epfoj fT

, U kj gngz ; tpdhffs;

1. rkthagGr; Nrhj i dary; Nj uenj Lf:fggl l xU nel l hz by; (leap year), 53 ntsspf:fp i kfs; , Uggj wfhd epfoj fT fhz f.
2. rkthagGr; Nrhj i dary; Nj uenj Lf:fggl l xU nel l hz by; (leap year); 52 ntsspf:fp i kfs; kl l nk , Uggj wfhd epfoj fT fhz f.
3. rkthagGr; Nrhj i dary; Nj uenj Lf:fggl l xU rhj huz Mz by; (non leap year), 53 ntsspf:fp i kfs; Uggj wfhd epfoj fT fhz f.
4. Kj y; , UgJ , ay; vz :fs; xU vz ; rkthagG Ki wapy; Nj unj Lf:fggLf:fwJ. mej vz ; xU gfh vz z hf , Uggj wfhd epfoj fT fhz f.
5. 35 nghUl fs; ml qf:pa nj hFgG xdwpy; 7 nghUl fs; Fi wghLi l ad . mj nj hFggypUeJ xU nghUs; rkthagG Ki wapy; Nj unj Lf:fggLf:fwJ mJ Fi waww nghUshf , Uggj wfhd epfoj fT fhz f.
6. xU tFggpYss 35 khz tuf:spy; 20 Ngu; Mz :fs; kwWk; 15 ngu; ngz :fs; rkthagG Ki wapy; xU khz tu; Nj unj Lf:fggLf:fwhu; vdrpy; gpd:tUk; epforr:pa; epfoj fT fhz f. (i) khz tdhf , Uj j y; (ii) khz t:ahf , Uj j y;
7. xU Fwggpl l ehs:py; ki otUtj wfhd epfoj fT 0.76. mf:Fwggpl l ehs:py; ki o tuhky; , Uggj wfhd epfoj fT fhz f.
8. xU rkthagGr; Nrhj i dary; xU epforr: A vdf. mj d; epugG epforr: A vdf. $P(A) : P(\bar{A}) = 7:12$ vdrpy; $P(A)$ l f; fhz f.
9. 1ypUeJ 100 ti uapyhd vz :fs; Fw:ff:fggl l rll fs:py; xU rll vLff: mJ 10 -My; tFgLk; vz z hf , Uff epfoj fT vdd.
10. 12 eyy Kl i l fs l d; 3 mOf:pa Kl i l fs; fyeJ , Uej d. xU eyy Kl i l i a vLggj wfhd epfoj fT vdd.
11. , U ehz aqfs; xNu Neuj j py; Rz l k; Nrhj i dary; mj pf gl rkhf xU j i y t:Ok; epforr:pa; epfoj fT vdd
12. , U gfi l fs; xUKi w c Ul l ggLf:pdwd. Kf vz :fi s nfhz l mi kff:ggLk; <upyff vz ; 3 -My; tFgLk; vz z hf , Uff epfoj fT fhz f.
13. xU r:hd gfi l , uz l Ki w c Ul l ggLf:fwJ. Kf vz :fspd; \$Lj y; 9 vdg; ngWtj wF epfoj fT fhz f.
14. , U gfi l fs; xUKi w c Ul l ggLf:pdwd. Kf vz :fspd; ngUffwgyd; gfh vz z hf , Uff epfoj fT fhz f
15. %dW gfi l fs; xNu Neuj j py; c Ul l ggLk; NghJ , U gfi l fs:pyk; xNu vz ; t:Ok; epforr:pa; epfoj fT fhz f.
16. 3,5,7 Mf:pa vz fi s , yffqfshf nfhz l xU , uz byff vz ; mi kff:ggLf:fwJ. mtntz ; 57 nguraj hf , Uff epfoj fT fhz f. (xNu , yffk; k:l l k; k:l l k; tuf:\$l hJ)
17. A,B , uz l epforr:fs:py; $P(A) = 1/2$ $P(B) = 7/10$ kwWk; $P(A \cup B) = 1$ vdrpy; (i) $P(A \cap B)$ (ii) $P(A^1 \cap B^1)$ i af; fhz f
18. A,B,C vdgd xdi w xdW t:pyfFk; kwWk; epi wT nra; epforr:fs; vdf. NkYk; $P(B) = \frac{3}{2} P(A)$ kwWk; $P(C) = \frac{1}{2} P(B)$ vdrpy; $P(A)$ i t f; fhz f.

I eJ kj gngz ; tpdhffs;

1. xU r:hd gfi l xUKi w c Ul l ggLf:fwJ. gpd:tUk; epforr:pfS f:hd epfoj fTfi sf; fhz f. (i) vz ; 4 fpi l j j y; (ii) xU , ul i l ggi l vz ; fpi l j j y; (iii) 6 - d; gfh fhuz pfs; fpi l j j y; (iv) 4 - i a t:pl g; ngh:pa vz ; fpi l j j y;
2. xU r:hd ehz ak; , uz l Ki w c Ul l ggLf:fwJ. fb:f:fhZ k; epforr:pfS f:hd epfoj fTfi sf; fhz f. (i) , U j i yfs; fpi l j j y; (ii) Fi wej J xU j i y fpi l j j y; (iii) xU G+ kl l k; fpi l j j y;
3. , U r:hd gfi l fs; xUKi w c Ul l ggLf:fwJ. gpd:tUk; epforr:pfS f:hd epfoj fTfi sf; fhz f. (i) Kf vz :fspd; \$Lj y; 8 Mf , Uj j y; (ii) Kf vz :fs; xNu vz :fshf , Uj j y; (iii) Kf vz :fspd; \$Lj y; 8 - i a t:pl mj pfkhhf , Uj j y;
4. edF fi yj : i tff:fggl l 52 rll l fi sf; nfhz l rll l f; fl bypUeJ rkthagGr; Nrhj i d Ki wapy; xU rll vLff:ggLf:fwJ. mej rll l gpd:tUtdthf , Uff epfoj fTfi sf; fhz f. (i) , uhrh (ii) fUgG , uhrh (iii)] NgL (iv) l akz l;
5. edF fi yj : i tff:fggl l 52 rll l fi sf; nfhz l rll l f; fl bypUeJ rkthagGr; Nrhj i d Ki wapy; xU rll vLff:ggLf:fwJ. mej rll l gpd:tUtdthf , Uff epfoj fTfi sf; fhz f.

- (i) $vLj j \quad rll \quad lakz \}; Mf, Uff$ (ii) $vLj j \quad rll \quad lakz \}; , yyhky; , Uff$ (iii) $vLj j \quad rll \quad V \}; rll \quad hf, yyhky; , Uff$
6. 1 Kj y; 100 ti uaryhd KO vz fspylUeJ rkthagG Ki wapy; Nj henj LffggLk; vz ; (i) xU KO thffkfhf , Uff (ii) KO fdkhf , yyhky; , Uff Mfpatwppd; epfoj fTfi s fhz f.
7. xU ngl bary; 4 gri r 5 eyk; kwWk; 3 rptgG epw geJfs; c ssd. Rk thagG Ki wapy; xU gei j Nj henj Lff mJ (i) rptgG epw gej hf , Uff (ii) gri r epw gej hf , yyhky; , Uff Mfpatwppd; epfoj fTfi s fhz f.
8. 20 rll Lfsy; 1 Kj y; 20 ti uAss KO vz fs; Fwppf;ggll Ssd. rkthagG Ki wapy; xU rll L vLffggLfpdwJ. mt;thW vLffggll rll bYss vz ; (i) 4 - d; kl qfhf , Uff (ii) 6 - d; kl qfhf , yyhky; , Uff Mfpa epforrpspd; epfoj fTfi s fhz f.
9. %dW ehz aqfs; xNu Neuj j y; Rz l ggLfpdw. rhphf , U Gffs; myyJ Fi wej gl rk; xU ji yahtJ fpi l fFk; epforrpad; epfoj ftpi df; fhz f.
10. xU gfi l , UKi w c Ul l ggLfpwJ. Fi wej J xU c Ul l ypyhtJ vz ; 5 fpi l ggj wfhd epfoj ftpi df; fhz f.
11. xU khz tpfF kUj ;Jtf; fy;Y}hapy; Nrhfi f fpi l ggj wfhd epfoj fT 0.16 vdf. nghwppay; fy;Y}hapy; Nrhfi f fpi l ggj wfhd epfoj fT 0.24 kwWk; , U fy;Y}hpspYk; Nrhfi f fpi l ggj wfhd epfoj fT 0.11 vdfy; (i) kUj ;Jtk; kwWk; nghwppay; fy;Y}hpspY; VNj Dk; xU fy;Y}hapy; Nrhfi f fpi l ggj wfhd epfoj fT fhz f. (ii) kUj ;Jtf; fy;Y}papy; kl LNkh myyJ nghwppay; fy;Y}hapy; kl LNkh Nrhfi f fpi l ggj wfhd epfoj fT fhz f.
12. "ENTERTAINMENT" vdw nrhyypYss vOj ;JfspyUeJ rkthagG Ki wapy; xU vOj ; j j ; Nj hT nraa> mtntOj ;J Mqfpy c apuOj j hfNth myyJ vOj ;J TMFNth , Uggj wfhd epfoj ftpi df; fhz f.
13. xU gfi l , UKi w c Ul l ggLfpwJ. Kj yhtj hf c Ul ggLk; NghJ xU , ul j l ggi l vz ; fpi l j j y; myyJ mt;tpU c Ul l ypy; Kf vz fspd; \$Lj y; 8 Mf , Uj j y; vDk; epforrpad; epfoj ftpi df; fhz f.
14. edF fi yj ;J i tffggll 52 rll Lfi sf; nfhz l rll Lf; fl byUeJ rkthagGr; Nrhj i d Ki wapy; xU rll L vLffggLfpwJ. mej rll L] Ngl hfNth myyJ , uhrhthFNth , Uggj wfhd epfoj ftpi df; fhz f.
15. xU i gapy; 10 ntsi s> 6 rptgG kwWk; 10 fUgG epwg; geJfs; c ssd. rk thagG Ki wapyxU gej pi d vLffk; NghJ mJ ntsi s myyJ rptgGepwg; gej hf, Uggj wfhd epfoj ftpi d fhz f.
16. A, B, C MfNahh; xU tpdhtwFj ; j hT fhz gj wfhd epfoj fTfs; Ki wNa $\frac{4}{5} > \frac{2}{3} > \frac{3}{7}$ vdf. A kwWk; B , UtUk; NrheJ j hT fhz gj wfhd epfoj fT $\frac{8}{15} > B$ kwWk; C , UtUk; NrheJ j hT fhz gj wfhd epfoj fT $\frac{2}{7} > A$ kwWk; C , UtUk; NrheJ j hT fhz gj wfhd epfoj fT $\frac{12}{35} > %tUk; NrheJ j hT fhz gj wfhd epfoj fT $\frac{8}{35} >$ vdfy; ahNuDk; xUth; mt;tpdhtpd; j hT fhz gj wfhd epfoj ftpi df; fhz f.$