10th MATHS SAMPLE PAPER-3.

Duration: 1HR+15min only (PULKIT JAWAL)

Marks: 40

Q1. If a triangle has a coordinates A(p,q), B(r,s) & C($\frac{t}{*}$, $\frac{u}{*}$). Then area of triangle is given by → (a) $\frac{1}{2}[p(u-s)+t(s-q)+r(u-q)]$
(b) $\frac{1}{2}[p(u-s)+t(s-q)+r(q-u)]$ (c) $\frac{1}{2}[(r(u-q)+t(s-q)+p(u-s)]$ (d) None

Q2. The value of $\left[\frac{(\sec 45°).(\sin 45°)+\tan 60°\cot 60°}{4}\right]^{0.5}$ = ?? (a) $\cos 60°$
(b) $\cos 90°$ (c) $\cos 45°$ (d) $\tan 45°$

Q3. In an equilateral triangle ABC, AD is the median from vertex A. if DC=5cm, then AD=?? (a) Can't determine (b) 25cm (c) 5cm (d) $5\sqrt{3}$ cm

Q4. If a probability of any event "m" then probability of its complementary event is. (a) (m−1) (b) (m+1) (c) 0 (d) None

Q5. A rational number $0.05\overline{671}$ is also represented as →
(a) 0.05671.... (b) 0.0567156715671..... (c) 0.0567167167 1.... (d) None

Q6. A rectangle having dimensions 4m×3m is inscribed in a circle. Then area of this circle is given by (a) $\frac{5\pi}{4}$ (b) $\frac{50\pi}{4}$ (c) $\frac{50\pi}{8}$ (d) None of these

Q7. If 2 lines are overlapping in nature and equation of one of the line is $-5x=7-2y$ then equation of other line is →
(a) $35x-14y=49$ (b) $35x-14y=-49$ (c) $-10x=14+4y$ (d) None

Q8. Given area of a sector having sector angle($x°$). If Area of the sector is $\frac{5}{36}$ times of the area of circle. Then value of x is (a) 10° (b) 50° (c) 100° (d) 20°

Q9. HCF of p, q, and r is (where p, q, r are prime numbers)
(a) 0 (b) pqr (c) pq (d) None

Q10. If a line divides any 2 sides of the triangle in same ratio then line is parallel to third side. The theorem is called —
(a) pythagoras theorem (b) BPT theorem (c) Budhayan theorem (d) None

Q11. Which one of them can never be the probability of any event (E).
(a) 1 (b) 25% (c) $\frac{1}{9}$ (d) $\frac{18}{10}$

Q12 If $x = a^2b$, $y = ab^2$ and $z = abc$ then $\frac{Lcm(x,y,z)}{Hcf(x,y,z)} = ??$

(a) a^2bc (b) ab^2 (c) abc (d) $a^2b^2c^2$

Q13. Area of triangle whose 2 of its angles = 60° and one side = $\sqrt{3}$ cm is

(a) $\frac{3}{4}$ cm² (b) $\frac{9}{4}$ cm² (c) $\frac{\sqrt{3}}{4}$ cm² (d) $\frac{3\sqrt{3}}{4}$ cm²

Q14. In ΔPQR, QU, RV and PT are the medians from their respective vertices. If A is the point of intersection of all the three medians whose coordinates are (-1,-4). and P (0,0) & R(1,1) then coordinates of Q are →

(a) (4, 13) (b) (13, 4) (c) (-4,-13) (d) None

Q15. $(\cos^4\theta) - (\sin^4\theta) = ??$ (a) $2\cos^2\theta + 1$ (b) $2\cos^2\theta$ (c) $1 - 2\cos^2\theta$ (d) $2\cos^2\theta - 1$

Q16. Prime factors of 45000 is (a) $5^4 \times 3^2 \times 2^2$ (b) $5^4 \times 3 \times 2^3$ (c) $5^4 \times 3^2 \times 2^3$ (d) None

Q17 The value of x and y for equations $\frac{2}{x} + \frac{3}{y} = \frac{9}{xy}$ & $\frac{4}{x} + \frac{9}{y} = \frac{21}{xy}$ is

(a) $x = 1, y = 3$ (b) $x = -1, y = -3$ (c) $x = 0, y = 3$ (d) $x = 3, y = 1$.

Q18 If $(3a + 4b) : (2b + a) = 9 : 4$ then value of $\frac{(30a + 40b)}{(20b + 10a)} = ??$

(a) $\frac{18}{2}$ (b) $\frac{18}{8}$ (c) $\frac{50}{2}$ (d) None

Q19. If $4\sec^2 A + 15\tan^2 A = 23$, then value of $(\sec A + \operatorname{cosec} A)^2 - \sin^2 A = ??$

(a) $\frac{17}{2}$ (b) $\frac{15}{2}$ (c) $\frac{6}{7}$ (d) None

Q20. In ΔABC, $\angle A = 45°$, $\angle B = 45°$. also coordinates of A (0,0), B (-1,-1) & C (-2,-2). then altitude "length" of this ΔABC is

(a) $\sqrt{2}$ cm (b) 2 cm (c) $\sqrt{8}$ cm (d) None

Q21. The $(3)^{0.5} \times \sqrt{27}$ is an _____ number.

(a) Rational (b) Irrational (c) Neither Rational nor Irrational (d) None

Q22. A dice is thrown at once. then probability of getting an even prime number is. (a) $\frac{5}{6}$ (b) $\frac{2}{6}$ (c) $\frac{3}{18}$ (d) $\frac{2}{9}$

Q23. Which one is terminating decimal expansion —

(a) $\frac{225}{2890}$ (b) $\frac{77}{2100}$ (c) $\frac{5}{8}$ (d) None of them is terminating decimal expansion.

Q24. Which one of the following doesn't have a value "NOT DEFINED".

(a) $\operatorname{cosec} 0°$ (b) $\cot 0°$ (c) $\sec 90°$ (d) $\tan 0°$

025 In a ΔABC, a line AD bisects the Base BC in 2 equal parts. If the coordinates of $A(5,-1)$, $B(-1,8)$ and $C(-3,-2)$ then length of AD = ??

(a) $\sqrt{13}$ (b) $\sqrt{5}$ (c) $\sqrt{13 \times 5}$ (d) Can't determine.

026. The value of x & y for equations $\frac{20}{x}+\frac{30}{y}=100$ & $\frac{40}{x}+\frac{90}{y}=50$ is

(a) $\left(\frac{25}{2}, -5\right)$ (b) $\left(\frac{-25}{2}, 5\right)$ (c) $\left(\frac{2}{25}, \frac{-1}{5}\right)$ (d) None

027. If $\sec\theta(1-\sin\theta)(1+\sin\theta) = (x-1)$ then value of 'x' is,

(a) 0 (b) 1 (c) -1 (d) None

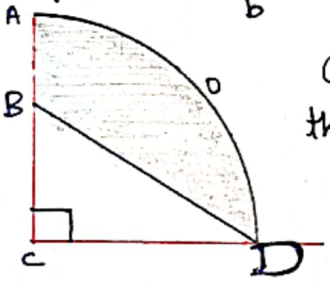
028. If P & Q coordinates are $(-2,-2)$ & $(2,-4)$. Then coordinates of R such that $PR = (0.5).PQ$ & R lies on the segment PQ. (a) $\left(\frac{-2}{3}, \frac{8}{3}\right)$ (b) $\left(\frac{2}{3}, \frac{8}{3}\right)$

(c) $\left(\frac{-2}{3}, \frac{-8}{3}\right)$ (d) Can't determine

029. Vertices of parallelogram are in order A(1,2), B(4,x), C(y,6) & D(3,5). Then value of (x+y) is → (a) -4 (b) 0 (c) 4 (d) None

030. If $\sin\theta = \frac{a}{b}$ then $\cos^2\theta$ = ?? (a) $\frac{b^2-a^2}{a^2}$ (b) $\frac{\sqrt{b^2-a^2}}{a^2}$ (c) $\frac{b^2-a^2}{b^2}$ (d) $\frac{b^2-a^2}{b}$

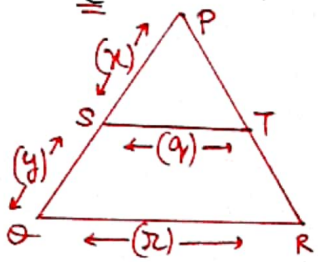
031.



Given a sector AODCB. in which BC = 2cm, and radius of this sector is 3.5cm. Then area of shaded region is

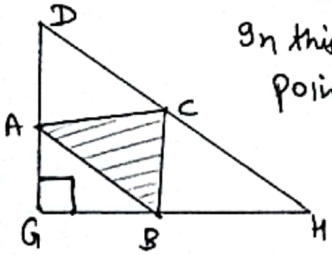
(a) $\frac{49}{4}$ cm² (b) $\frac{49}{8}$ cm² (c) $\frac{7}{2}$ cm² (d) 6.125cm²

032. In this triangle PQR, $\angle PST = \angle PQR$ & $\angle PTS = \angle PRQ$ then which relation is correct.



(a) $qx-qy=rx$ (b) $qy-qx=rx$ (c) $qx+qy=rx$

033.



In this right angled ΔDGH. and A, B & C are the mid points of their respective sides. then which relation is true.

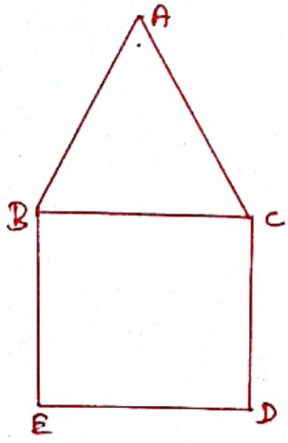
(a) Area $(\Delta ABC) = \frac{1}{8} \times$ Area (ΔDGH)

(b) Area of $(\Delta ABC) = 4 \times$ Area (ΔDGH)

(c) Area of $\Delta DGH = \frac{1}{4} \times$ Area (ΔABC)

(d) None of these

034.



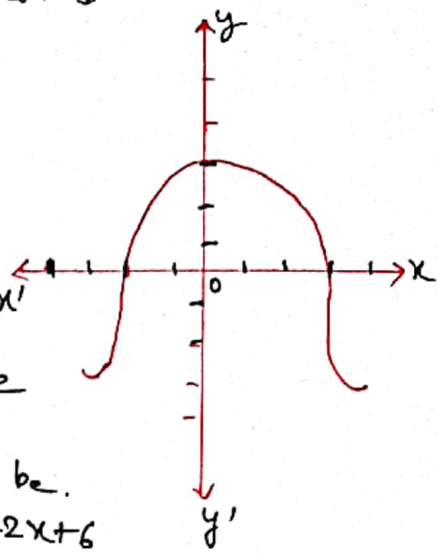
In this figure an isosceles ΔABC with AB = AC = x cm. is mounted on a square BCDE having CD = 4cm. If perimeter of the figure ABEDC is 24cm. then x = ??

(a) 6 (b) 12 (c) 14 (d) Can't determine.

Q35. The perimeter of any sector having sector angle θ and radius 'R' is given by.

(a) $2R\left(1+\frac{\pi}{360}\right)$ (b) $R+\frac{2\pi R\theta}{360}$ (c) $2R+\frac{\pi R^2\theta}{360}$ (d) $2R\left(1+\frac{\pi\theta}{360}\right)$

Q36. In this graph of polynomial answer the following questions



Q36. The zeros of the polynomial from this Graph is →

(a) (-2, 2) (b) (3, 2) (c) (-2, -3) (d) (-2, +3)

Q37. from this graph the quadratic equation $ax^2+bx+c=0$ the parabola is opening downwards then value of 'a' is

(a) $a=0$ (b) $a=1$ (c) $a>1$ (d) None of these

Q38. The equation of the polynomial from this graph will be.

(a) (x^2-x-6) (b) (x^2+x+6) (c) (x^2-x+6) (d) x^2-2x+6

Q39. for quadratic equation $2x^2-8x+K$, the sum of roots is 4 & one root is $\frac{4+\sqrt{2}}{2}$ then value of K=??

(a) K=-7 (b) K=7 (c) K=14

Q40. The zeros of the polynomial $4\sqrt{3}x^2+5x-2\sqrt{3}$ is

(a) $\frac{\sqrt{3}}{4}$ and $\frac{-2}{3}\sqrt{3}$ (b) $-\frac{\sqrt{3}}{4}, \frac{-2}{3}\sqrt{3}$ (c) $\frac{\sqrt{3}}{4}, \frac{2}{3}\sqrt{3}$ (d) None

Prepared By

PULKIT JAWAL

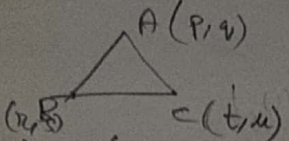
(pulkitjawal@gmail.com)

SOLUTIONS

Sample paper 3

ANSWERS (of Sample paper-3)

Q1. Ans (d) option (None)



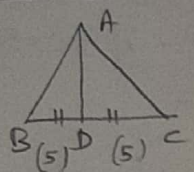
Area of $\Delta ABC = \frac{1}{2}\left(x_1(y_2-y_3)+x_2(y_3-y_1)+x_3(y_1-y_2)\right)$

Put $x_1=p$, $x_2=r$, $x_3=t$ & $y_1=q$, $y_2=s$, $y_3=u$

ΔABC Area $= \frac{1}{2}\left[p(s-u)+r(u-q)+t(q-s)\right]$

Q2. Ans (c) $\cos 45° = \frac{1}{\sqrt{2}}$ on solving we get $\frac{1}{\sqrt{2}}$

Q3 Ans (d) option $5\sqrt{3}$ cm



If DC = 5 then BD = 5cm since AD median bisect the base BC in 2 equal parts.

$\therefore$ BC = 10 $\therefore$ AB = BC = CA = 10cm.

Now in $\Delta ADB \Rightarrow AB^2 = AD^2 + BD^2$ (Since ADB is right Δ)

$\Rightarrow (10)^2 = (AD)^2 + (5)^2$

$\Rightarrow \sqrt{100-25} = AD = \sqrt{75} = 5\sqrt{3}$ cm

Q4 Ans (d) None

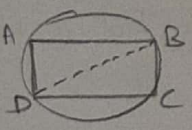
$M + \bar{M} = 1$ (Rule of probability)

→ Complement of event (M).

Then $(\bar{M}) = 1 - M$

Q5 Ans (c) option $0.05\overline{71} = 0.5671671671\ldots$

Q6 Ans (c) option $\frac{50\pi}{8}$ OR $\frac{25\pi}{4}$



AB = 4m

BC = 3m

& given BD = diameter = diagonal of Rectangle.

$BD^2 = BC^2 + CD^2$ (in ΔBCD)

$BD = \sqrt{4^2+3^2} = \sqrt{25} = 5$ cm.

$\therefore$ Radius $= \frac{5}{2}$ cm. $\therefore$ Area of circle $= \pi R^2 = \pi\left(\frac{5}{2}\right)^2 = \frac{25\pi}{4}$ cm²

Q7 Ans (b) option overlapping lines are dependent lines OR Coincident lines.

Q8 Ans (b) Area of Sector $= \frac{5}{36} \times$ Area of circle $\Rightarrow \frac{\pi R^2 x}{360} = \frac{5}{36} \times \pi R^2$ $\therefore x = 50°$

Q9 Ans (d) Hcf of (P, q, r) = 1

Q10 Ans (d) Converse of BPT

Q11 Ans (d) option.

Probability of any event can never be greater than 1

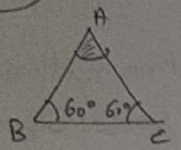
(d) $\frac{18}{10}$ OR 1.8

Q12. (c) abc

$x = a^2b$, $y = ab^2$, $z = abc$

$\frac{LCM(x,y,z)}{HCF(x,y,z)} = \frac{a^2b^2c}{ab} = \boxed{abc}$

Q13. (d) $\frac{3\sqrt{3}}{4}$ cm²



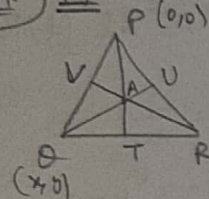
Third angle is also 60° since $\angle A + \angle B + \angle C = 180°$

$\boxed{\angle A = 60°}$

In Equilateral ΔABC, $AB = BC = CA = \sqrt{3}$ cm.

Area of $\Delta ABC = \frac{\sqrt{3}}{4}(\text{side})^2 = \frac{\sqrt{3}}{4}(\sqrt{3} \times \sqrt{3}) = \boxed{\frac{3\sqrt{3}}{4}\text{ cm}^2}$

Q14. (c) (−4, −13)



Here RV, QU, PT are the medians & A is the point of intersection of all three medians.

Hence A is centroid of ΔPQR,

$A(x,y) = \left(\frac{x_1+x_2+x_3}{3}, \frac{y_1+y_2+y_3}{3}\right)$

$A(-1,-4)$

$-1 = \frac{0+1+x}{3}$ & $-4 = \frac{0+1+y}{3}$

$x = -4$, $y = -13$ $\therefore \boxed{Q(-4,-13)}$

Q15. (d) $2\cos^2\theta - 1$

$\cos^4\theta - \sin^4\theta = (\cos^2\theta)^2 - (\sin^2\theta)^2 = (\cos^2\theta + \sin^2\theta)(\cos^2\theta - \sin^2\theta)$

$\Rightarrow 1 \times (\cos^2\theta - \sin^2\theta) \Rightarrow \cos^2\theta - (1 - \cos^2\theta) = 2\cos^2\theta - 1$

Q16. (c) $45000 = 5^4 \times 3^2 \times 2^3$

Q17. (a) $x = 1/3$, $y = 3$

$\frac{2}{x} + \frac{3}{y} = \frac{9}{xy}$ & $\frac{4}{x} + \frac{9}{y} = \frac{21}{xy}$

$xy\left(\frac{2}{x} + \frac{3}{y}\right) = \frac{9}{xy} \times xy \Rightarrow \frac{2}{x}(xy) + \frac{3}{y}(xy) = 9$

$\Rightarrow \boxed{2y + 3x = 9}$ similarly $\boxed{4y + 9x = 21}$

solving these equations we get $\boxed{x = 1, y = 3}$

Q18. (b) 9/4

$\frac{10 \times (3a + 4b)}{10 \times (2b + a)} = \left(\frac{9}{4}\right)\frac{\times 10}{\times 10} \Rightarrow \frac{30a + 40b}{20b + 10a} = \frac{90}{40}$ OR $\frac{18}{8} = \boxed{\frac{9}{4}}$

Q19. (b) 15/2

$4\sec^2 A + 15\tan^2 A = 23$ ($1 + \tan^2\theta = \sec^2\theta$ identity)

$4\sec^2 A + 15(\sec^2 A - 1) = 23$

$4\sec^2 A + 15\sec^2 A - 15 = 23$

$19\sec^2 A = 38$

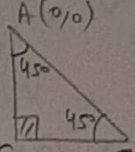
$\sec^2 A = 2$ OR $\sec A = \sqrt{2}$

OR $\cos A = \frac{1}{\sqrt{2}}$ $\boxed{A = 45°}$

$(\sec A + \text{cosec} A)^2 - \sin^2 A = ??$

$(\sec 45° + \text{cosec}\, 45°)^2 - \sin^2 45° = 15/2$

Q20. (c) $\sqrt{8}$



This is Right angled Δ. Its height is AC

$AC = \sqrt{(-2)^2 + (2)^2}$

$AC = \sqrt{4+4} = \sqrt{8}$

$\boxed{AC = 2\sqrt{2}\text{ cm}}$ ⇒ altitude

Q21. (a)

$(3)^{0.5} \times \sqrt{27} = \sqrt{3} \times \sqrt{27}$

$= \sqrt{81} = 9$ Rational No.

Q22. (c)

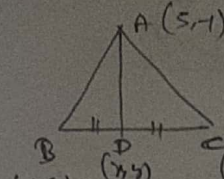
$\frac{\text{favourable}}{\text{Total outcomes}} = \frac{1}{6}$ OR $\frac{3}{18}$

Q23. (c) $\frac{5}{8}$ is terminating

Q24. (d)

$\tan 0° =$ 0 Value

025. (c) $\sqrt{65}$



(AD is the median since median bisect the base in equal parts.)

BD = DC ∴ D is the midpoint of BC

$D(x,y) = \left(\frac{-1+(-3)}{2}, \frac{8+(-2)}{2}\right)$

$D(x,y) = (-2, 3)$

A(5,-1) & D(-2,3) use distance formula.

$AD = \sqrt{65}$

026. $(2/25$ & $-1/5)$

$\frac{20}{x} + \frac{30}{y} = 100$ & $\frac{40}{x} + \frac{90}{y} = 50$ put $\frac{1}{x} = m$ & $\frac{1}{y} = n$

$20m + 30n = 100$ & $40m + 90n = 50$

$2m + 3n = 10$ & $4m + 9n = 5$

$m = 25/2$ & $n = -5$

$\therefore x = 2/25$ & $y = -1/5$

027. (d) None

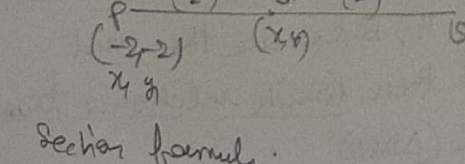
$\sec\theta(1-\sin\theta)(1+\sin\theta) = x+1$

$\sec\theta(1-\sin^2\theta) = x+1$

$\frac{1-\sin^2\theta}{\cos^2\theta} = x+1$ or $\frac{\cos^2\theta}{\cos^2\theta} = x+1$

$1 = x+1$ or $x = 2$

028. (c) $(-2/3, -8/3)$



$PB = 0.5\,PQ$

$PB = \frac{1}{2}PQ$

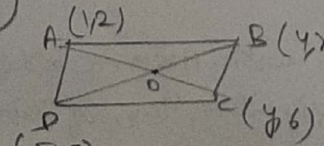
$\frac{PB}{PQ} = \frac{1}{2}$ or

Section formula:

$B(x,y) = \left(\frac{1(2)+2(-2)}{3}, \frac{1(4)+2(-2)}{3}\right)$

$B(x,y) = \left(\frac{2-4}{3}, \frac{-4-4}{3}\right)$ or $\left(\frac{-2}{3}, -8/3\right)$

029. (c) 4



Diagonals of parallelogram Bisect each other. Hence their mid points are same. $\frac{1+y}{2} = \frac{4+3}{2}$ and $\frac{2+6}{2} = \frac{x+5}{2}$

$y = 7$ $x = -3$ $\therefore x+y = 4$

030. (c) $\frac{b^2-a^2}{b^2}$

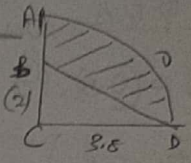
$\sin\theta = a/b$.

$\cos\theta = (1-\sin\theta)$

(Using $\sin^2\theta + \cos^2\theta = 1$)

$\cos^2\theta = 1 - \frac{a^2}{b^2} = \frac{b^2-a^2}{b^2}$

031. (b) $49/8\ cm^2$



Here CD = AC = Radius = 3.5cm

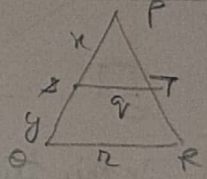
Shaded portion area = Area of Sector − Area of ΔBCD.

$= \frac{\pi R^2\theta}{360} - \frac{1}{2} \times BC \times CD$.

$= \frac{22 \times 35 \times 35 \times 90}{7 \times 10 \times 10 \times 360} - \frac{1}{2} \times 2 \times 3.5$

$= \frac{49}{8}\ cm^2$

032. (c)



If $\angle PST = \angle PQR$

& $\angle PTS = \angle PRQ$

then it means (ST ∥ QR) line. and hence

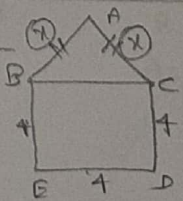
$\Delta PST \sim \Delta PQR$

$\therefore \frac{x}{x+y} = \frac{q}{r}$ or $qx + qy = rx$

033. (d) None

area of $(\Delta APS) = \frac{1}{4} \times$ area (ΔDGH)

034. (a) 6cm



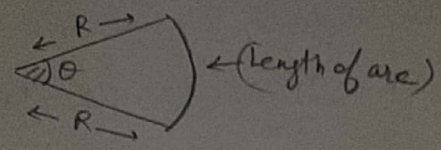
Perimeter = 24.

$x + x + 4 + 4 + 4 = 24$

$2x + 12 = 24$

$x = 6$

Q35.



Perimeter of Sector is (R + R + length of arc)

$$2R + \frac{2\pi R\theta}{360} \Rightarrow \boxed{2R\left(1 + \frac{\pi\theta}{360}\right)}$$

Q36. (d) option

Two zeros (−2, 3)

Q37. (d) None ($a < 0$)

when parabola opening downward $a < 0$

" " " Upward $a > 0$

Value of 'a' can never $= 0$.

Q38. (a)

from this graph 2 zeros, −2, 3.

$(x-(-2))(x-3)$ OR $(x+2)(x-3)$

$\boxed{x^2 - x - 6}$

OR

$\alpha = -2$, $\beta = 3$ $\therefore x^2 - (\alpha+\beta)x + \alpha\beta = 0$

$\boxed{x^2 - x - 6}$

Q39. (b) $K = 7$

Q40. (a)

option method

Put (a) $\frac{\sqrt{3}}{4}$ $k - \frac{2}{3}\sqrt{3}$.

It will satisfy the equation $\boxed{4\sqrt{3}x^2 + 5x - 2\sqrt{3} = 0}$