

SIR CV RAMAN COACHING CENTRE- IDAPPADI ,

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XII- MATHS EXERCISE 3.1,3.2,3.3. SLIP TEST QUESTION PAPER - 2024

SECTION - A (10 X 5 = 50 M)

ANSWER ANY TEN QUESTIONS

1. If the sides of a cubic box are increased by 1, 2, 3 units respectively to form a cuboid, then the volume is increased by 52 cubic units. Find the volume of the cuboid.

2.

If α , β and γ are the roots of the cubic equation $x^3 + 2x^2 + 3x + 4 = 0$, form a cubic equation whose roots are

- (i) $2\alpha, 2\beta, 2\gamma$ (ii) $\frac{1}{\alpha}, \frac{1}{\beta}, \frac{1}{\gamma}$ (iii) $-\alpha, -\beta, -\gamma$

3.

If α, β , and γ are the roots of the equation $x^3 + px^2 + qx + r = 0$, find the value of $\sum \frac{1}{\beta\gamma}$ in

terms of the coefficients.

4.

If p and q are the roots of the equation $lx^2 + nx + n = 0$, show that $\sqrt{\frac{p}{q}} + \sqrt{\frac{q}{p}} + \sqrt{\frac{n}{l}} = 0$.

5.

If the equations $x^2 + px + q = 0$ and $x^2 + p'x + q' = 0$ have a common root, show that it must be equal to $\frac{pq' - p'q}{q - q'}$ or $\frac{q - q'}{p' - p}$.

6. Form a polynomial equation with integer coefficients with $\sqrt{\frac{\sqrt{2}}{\sqrt{3}}}$ as a root

7. Prove that a line cannot intersect a circle at more than two points.

If k is real, discuss the nature of the roots of the polynomial equation $2x^2 + kx + k = 0$, in terms of k .

8. Prove that a straight line and parabola cannot intersect at more than two points.

9. Solve the cubic equation : $2x^3 - x^2 - 18x + 9 = 0$ if sum of two of its roots vanishes.

10. Solve the equation : $x^4 - 14x^2 + 45 = 0$.

11.

Determine k and solve the equation $2x^3 - 6x^2 + 3x + k = 0$ if one of its roots is twice the sum of the other two roots.

12.

13. If the roots of $x^3 + px^2 + qx + r = 0$ are in H.P., prove that $9pqr = 27r^2 + 2q^3$.
Assume $p, q, r \neq 0$
14. Find the condition that the roots of $ax^3 + bx^2 + cx + d = 0$ are in geometric progression. Assume $a, b, c, d \neq 0$
15. Solve the equation $x^4 - 9x^2 + 20 = 0$.

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