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MM 90

Mock Test IX

Time 3 hours

Paper prepared by **Dev Anoop**,

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1 Mark Each

- If $x \neq y$, then $(x, y) \neq (y, x)$, but if $x = y$ then
(A) $(x, y) \neq (y, x)$ (B) $(x, y) = (y, x)$
(C) $(x, y) = (-y, -x)$ (D) $(x, y) = (-y, x)$
- If $\frac{x}{y} + \frac{y}{x} = -1$ ($x, y \neq 0$), then value of $x^3 - y^3$ is
(A) 1 (B) -1 (C) 0 (D) $\frac{1}{2}$
- P ($x, 0$) lies
(A) I or II Quadrant (B) III or IV Quadrant
(C) x - axis (D) y - axis
- The number of dimensions, a solid has
(A) 1 (B) 2 (C) 3 (D) 0
- $\sqrt{5+2\sqrt{6}}$
(A) $\sqrt{2} + \sqrt{3}$ (B) $\sqrt{2} - \sqrt{3}$ (C) $-\sqrt{2} + \sqrt{3}$ (D) None of these
- Distance of point P ($3, 4$) from the origin is
(A) 3 (B) 4 (C) 7 (D) 5
- Which of the following needs a proof?
(A) Theorem (B) Axiom (C) Definition (D) Postulate
- Two sides of a triangle have lengths 8 cm and 3 cm. The third side lies between
(A) 5 and 11 (B) 4 and 11 (C) 3 and 11 (D) None of these

2 Marks Each

- x is an irrational number. What can you say about the number x^2 . Justify.

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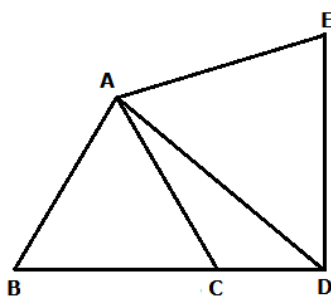
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10. Ray OC stands on line AB. OP and OQ are bisectors of angles AOC and BOC respectively. Then $\angle POQ = 90^\circ$. Justify.
11. $AB = AC$, $AC = BC$. Then $\triangle ABC$ is of the type _____. Justify using Euclid's Postulate.
12. Without finding the cubes, factorise $(x - y)^3 + (y - z)^3 + (z - x)^3$.
13. If $x + \frac{1}{x} = 2$ then find $x^3 + \frac{1}{x^3}$
Or
Represent $0.\overline{734}$ as a vulgar fraction
14. Find area of triangle with sides 3cm, 4cm and 5cm using heron's formula.

3 Marks Each

15. Represent $\sqrt{29}$ on number line. Prove your construction.
16. Find area of trapezium with parallel sides 13cm and 25cm and non parallel sides 15cm and 17cm
17. In fig. $AB = AC$, $AD = AE$ and $\angle BAC = \angle DAE$. Show $BD = CE$



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18. Factorise : $16x^2 + 24xy + 9y^2 - 25z^2$

19. Factorise $a^6 - b^6$ completely.

Or

Factorise $27r^3 - \frac{1}{216} - \frac{9r^2}{2} + \frac{r}{4}$

20. Prove altitudes to equal sides of an isosceles Δ are equal.

21. Two lines are respectively perpendicular to two parallel lines.
Show that they are parallel to each other.

22. Prove isosceles triangle property.

Or

ABC is a right triangle and right angled at B such that $\angle BCA = 2\angle BAC$.
Show that hypotenuse $AC = 2 BC$.

23. Bisectors of angles B and C of triangle ABC intersect at O.

Show angle $BOC = 90^\circ + \frac{\angle A}{2}$

24. $OC \perp AOB$, OD intersects $\angle AOC$ prove $2\angle COD = \angle DOB - \angle DOA$

4 Marks Each

25. Prove that $(a+b+c)^3 - a^3 - b^3 - c^3 = 3(a+b)(b+c)(c+a)$.

26. Factorise using factor theorem $x^3 + 13x^2 + 32x + 20$

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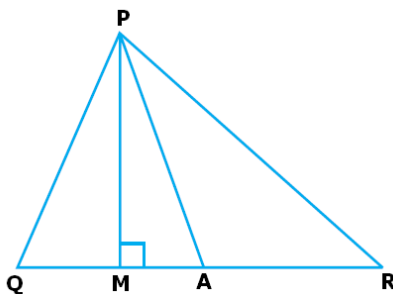
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27. Evaluate using identity $50^3 - 35^3 - 15^3$
28. S is any point in the interior of ΔPQR . Show that $SQ + SR < PQ + PR$.
29. ABC is a right triangle such that $AB = AC$ and bisector of angle C intersects the side AB at D. Prove that $AC + AD = BC$.

Or

Prove that two triangles are congruent if two angles and the included side of triangle are equal to two angles and the included side of other triangle.

30. In Fig, $\angle Q > \angle R$, PA is the bisector of $\angle QPR$ and $PM \perp QR$. Prove that $\angle APM = \frac{1}{2}(\angle Q - \angle R)$



Or

D is the midpoint of side AC of triangle ABC and $DA = DB$ Show ABC is a right triangle.

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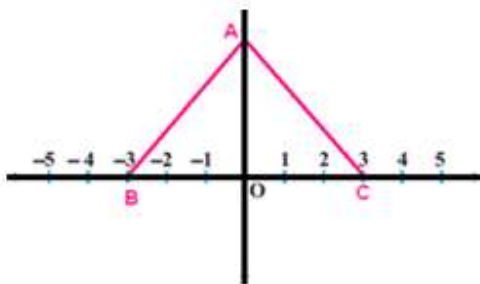
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31. Factorise $10x^2 - 29x + 10$ using factor theorem
32. Represent $\sqrt{6.5}$ on number line
33. Find a and b, $\frac{7 + \sqrt{5}}{7 - \sqrt{5}} - \frac{7 - \sqrt{5}}{7 + \sqrt{5}} = a - \frac{7}{11}\sqrt{5}b$
34. In figure $\triangle ABC$ is equilateral. Find the coordinates of A



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