1 Mark Each

1. On rationalizing the denominator $\frac{1}{n+\sqrt{n+1}}$ where n = 5 becomes

   (a) $\frac{5-\sqrt{6}}{19}$ (b) $5+\sqrt{6}$ (c) $\frac{1}{5+\sqrt{6}}$ (d) $\frac{1}{5-\sqrt{6}}$

2. If $\frac{x}{y}+\frac{y}{x}=-1$ (x, y ≠ 0), then value of $x^3 - y^3$ is

   (a) 1 (b) – 1 (c) 0 (d) $\frac{1}{2}$

3. Line y = 7 is parallel to _____ axis
   (a) x axis (b) y axis (c) both (d) None of these

4. The number of dimensions, a solid has
   (a) 1 (b) 2 (c) 3 (d) 0

5. If one of the angles of a triangle is 130°, then the angle between the bisectors of the other two angles can be
   (a) 50° (b) 65° (c) 145° (d) 155°

6. D is a point on the side BC of a Δ ABC such that AD bisects ∠BAC. Then
   (a) BD = CD (b) BA > BD (c) BD > BA (d) CD > CA

7. Which of the following needs a proof
   (a) Theorem (b) Axiom (c) Definition (d) Postulate

8. 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

9. An irrational number between 2 and 2.1 is
   (a) 2.011… (b) 2.010110111111 (c) 2.001… (d) 2.010110111111…

10. The coefficient of x in (3x + 5)(3x + 11) is
    (a) 9 (b) 48 (c) 15 (d) None of these

2 Marks Each

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

12. Ray OC stands on line AB.OP and OQ are bisectors of angles AOC and BOC respectively. ∠POQ = 90°. Justify.

13. AB = AC, AC = BC. Then ΔABC is of the type _____. Justify using Euclid's Postulate.

14. Without finding the cubes, factorise $(x - y)^3 + (y - z)^3 + (z - x)^3$.

15. Write general form of polynomial of degree 3.

16. DE || QR are cut by transversal n at A and B respectively. AP and BP are bisectors of ∠EAB and ∠RBA, respectively. Find ∠APB.

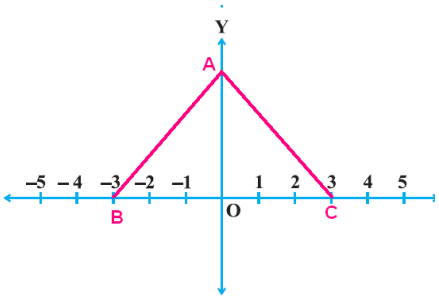
17. How many triangles can be drawn having its angles as 54°, 64° and 62°? Give reason for your answer.

18. Mark points (2, 2), (−2 , 2), (−2, −2), (2, −2) in order. What polygon do you get?

3 Marks Each

19. Represent $\sqrt{29}$ on number line. Prove your construction.

20. If $x = \sqrt{3} - 2$, find the value of $\sqrt{x} - \frac{1}{\sqrt{x}}$



21. $\frac{7+\sqrt{5}}{7-\sqrt{5}} - \frac{7-\sqrt{5}}{7+\sqrt{5}} = a - \frac{7}{11}\sqrt{5}b$

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

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

24. In fig1. Δ ABC is equilateral as shown. Find coordinates of C

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

26. Prove that the sum of the three angles of a triangle is 180°.

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

28. If the bisector of an angle of a triangle also bisects the opposite side, prove that the triangle is isosceles.

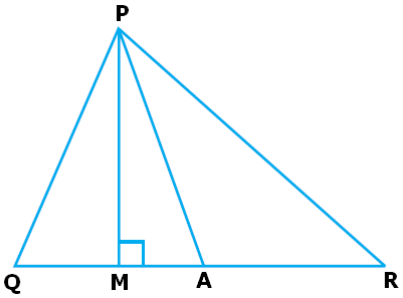
4 Marks Each

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

30. Factorise: $x^3 + 13x^2 + 32x + 20$

31. Factorise: $\frac{l^3}{m^3} + \frac{m^3}{n^3} + \frac{n^3}{l^3} - 3$

32. S is any point in the interior of Δ PQR.
Show that SQ + SR < PQ + PR.



33. 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.

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