



IIIT Bangalore – COMET Foundation

CBSE Class X Mathematics Examination 2016

Delhi Set-1

Section A (1 Mark Each)

1. Find the polynomial whose sum and product of zeroes are -6 and 5 respectively.
2. Find the distance of the point from its starting point if a person travels 15 m west and then 8 m north.
3. If PA and PB are tangents from an external point P to a circle with centre O and $\angle PAB = 50^\circ$, find $\angle AOB$.
4. A ladder reaches a point D on a vertical pole AB of height 6 m. The ladder is inclined at an angle of 60° with the horizontal and $AD = 2.54$ m. Find the length of the ladder. (Use $\sqrt{3} = 1.73$)

Section B (2 Marks Each)

5. If -5 is a root of the quadratic equation $2x^2 + px - 15 = 0$, find the value of p . Also find the value of k if $p(x^2 + x) + k = 0$ has equal roots.
6. Find the coordinates of the points which trisect the line segment joining the points $(2, -2)$ and $(-7, 4)$.
7. Prove that a parallelogram circumscribing a circle is a rhombus.
8. Find the area of a triangle whose vertices are $A(3, 0)$, $B(6, 4)$ and $C(-1, 3)$. Also, determine whether the triangle is isosceles right-angled.
9. If the 4^{th} term of an A.P. is zero, prove that the 25^{th} term of the A.P. is three times the 11^{th} term.
10. If TP and TQ are tangents to a circle with centre O from an external point T , prove that $\angle PTQ = 2\angle OPQ$.

Section C (3 Marks Each)

11. In a right-angled triangle ABC , right-angled at A , $AB = 12$ cm and $AC = 5$ cm. Find the area of the shaded region formed by the semicircle drawn on the hypotenuse and the triangle.

12. A hemispherical tank of diameter 3 m is full of water. It is being emptied by a pipe at the rate of $3\frac{4}{7}$ litres/sec. How long will it take to empty half of the tank?
13. Find the sum of all three-digit natural numbers which are divisible by 7.
14. The angle of elevation of the top of a building from the foot of a tower is 30° and the angle of elevation of the top of the tower from the foot of the building is 60° . If the tower is 50 m high, find the height of the building.
15. Prove that $bx = ay$ if the point $P(x, y)$ is equidistant from the points $A(a+b, b-a)$ and $B(a-b, a+b)$.