



**e-Edge Education Centre**

**Time -2hr. Sub-Maths Class-X M.M- 80**

1. Prove that  $\sqrt{5}$  is irrational. [4]
2. Check whether  $6n$  can end with the digit 0 for any natural number  $n$ . [4]
3. Find the zeroes of the following quadratic polynomials and verify the relationship between the zeroes and the coefficients. [4]  
(i)  $x^2 - 2x - 8$  (ii)  $4s^2 - 4s + 1$  (iii)  $6x^2 - 3 - 7x$
4. Obtain all other zeroes of  $3x^4 + 6x^3 - 2x^2 - 10x - 5$ , if two of its zeroes are  $\sqrt{\frac{5}{3}}$  and  $-\sqrt{\frac{5}{3}}$  [4]
5. A boat goes 30 km upstream and 44 km downstream in 10 hours. In 13 hours, it can go 40 km upstream and 55 km down-stream. Determine the speed of the stream and that of the boat in still water. [4]
6. Draw the graphs of the equations  $5x - y = 5$  and  $3x - y = 3$ . Determine the co-ordinates of the vertices of the triangle formed by these lines and the y axis.
7. Find the roots of the following quadratic equations by factorisation: [4]  
(iii)  $\sqrt{2}x^2 + 7x + 5\sqrt{2} = 0$  (iv)  $2x^2 - x + \frac{1}{8} = 0$
8. Find the roots of the equation  $5x^2 - 6x - 2 = 0$  by the method of completing the square. [4]
9. Find the 20th term from the last term of the AP : 3, 8, 13, . . . , 253. [4]
10. . The sum of the third and the seventh terms of an AP is 6 and their product is 8. Find the sum of first sixteen terms of the AP. [4]
11. In what ratio does the point  $(-4, 6)$  divide the line segment joining the points A  $(-6, 10)$  and B  $(3, -8)$ ? [4]
12. . If  $\sin(A - B) = \frac{1}{2}$ ,  $\cos(A + B) = \frac{1}{2}$ ,  $0^\circ < A + B \leq 90^\circ$ ,  $A > B$ , find A and B. [4]
- 13.. Prove the following identities, where the angles involved are acute angles for which the expressions are defined. [4]  
(i)  $\frac{\cos A - \sin A + 1}{\cos A + \sin A - 1} = \operatorname{cosec} A + \cot A$  using the identity  $\operatorname{cosec}^2 A = 1 + \cot^2 A$ .
14. The angles of elevation of the top of a tower from two points at a distance of 4 m and 9 m from the base of the tower and in the same straight line with it are complementary. Prove that the height of the tower is 6 m. [4]
15. A triangle ABC is drawn to circumscribe a circle of radius 4 cm such that the segments BD and DC into which BC is divided by the point of contact D are of lengths 8 cm and 6 cm respectively (see Fig. 10.14). Find the sides AB and AC. [4]

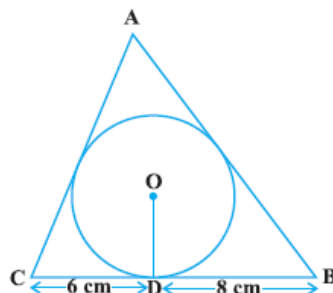


Fig. 10.14



**e-Edge Education Centre**

**16.** Let ABC be a right triangle in which  $AB = 6$  cm,  $BC = 8$  cm and  $\angle B = 90^\circ$ . BD is the perpendicular from B on AC. The circle through B, C, D is drawn. Construct the tangents from A to this circle. [4]

**17.** A chord of a circle of radius 12 cm subtends an angle of  $120^\circ$  at the centre. Find the area of the corresponding segment of the circle.  
(Use  $\pi = 3.14$  and  $\sqrt{3} = 1.73$ ) [4]

**18. 2.** A right triangle, whose sides are 3 cm and 4 cm (other than hypotenuse e) is made to revolve about its hypotenuse. Find the volume and surface area of the double cone so formed. (Choose value of  $\pi$  as found appropriate.) [4]

**19.** The following table shows the ages of the patients admitted in a hospital during a year:

Age (in years)	5 - 15	15 - 25	25 - 35	35 - 45	45 - 55	55 - 65
Number of patients	6	11	21	23	14	5

Find the mode and the mean of the data given above. Compare and interpret the two measures of central tendency. [4]

**20.** A bag contains 3 red balls and 5 black balls. A ball is drawn at random from the bag. What is the probability that the ball drawn is (i) red ? (ii) not red? [4]

**21.** Draw a right triangle in which the sides (other than hypotenuse) are of lengths 4 cm and 3 cm. Then construct another triangle whose sides are  $\frac{5}{3}$  times the corresponding sides of the given triangle. [4]