DPP
DAILY PRACTICE PROBLEMS

CLASS : XIth **SUBJECT : MATHS**
DATE : **DPP NO. : 3**

Topic :- CO-ORDINATE GEOMETRY

1. At a point on the ground the angle of elevation of a tower is such that its cotangent is $\frac{3}{5}$. On walking 32 m towards the tower the cotangent of the angle of elevation is $\frac{2}{5}$. The height of the tower is

a) 160 m b) 120 m c) 64 m d) None of these

2. Area of quadrilateral whose vertices are (2, 3), (3, 4), (4, 5) and (5, 6), is equal to

a) 0 b) 4 c) 6 d) None of these

3. If the area of a triangle ABC is Δ, then $a^2\sin 2B + b^2\sin 2A$ is equal to

a) 3Δ b) 2Δ c) 4Δ d) -4Δ

4. Consider the following statements :

1. If in a $\Delta\, ABC$, $\frac{\sin A}{\sin C} = \frac{\sin(A-B)}{\sin(B-C)}$, then a^2, b^2, c^2 are in AP

2. If exradius r_1, r_2 and r_3 of a $\Delta\, ABC$ are in HP, then the sides a, b, c are in AP

Which of these is/are correct?

a) Only (1) b) Only (2) c) Both (1) and (2) d) None of these

5. If the sides of the triangle are $p, q, \sqrt{p^2+q^2+pq}$, then the greatest angle is

a) $\frac{\pi}{2}$ b) $\frac{5\pi}{4}$ c) $\frac{2\pi}{3}$ d) $\frac{7\pi}{4}$

6. If x, y, z are perpendicular drawn from the vertices of triangle having sides a, b and c, then the value of $\frac{bx}{c} + \frac{cy}{a} + \frac{az}{b}$ will be

a) $\frac{a^2+b^2+c^2}{2R}$ b) $\frac{a^2+b^2+c^2}{R}$ c) $\frac{a^2+b^2+c^2}{4R}$ d) $\frac{2(a^2+b^2+c^2)}{R}$

7. A balloon is observed simultaneously from three points A, B and C on a straight road directly under it. The angular elevation at B is twice and at C is thrice that of A. If the distance between A and B is 200 m and the distance between B and C is 100 m, then the height of balloon is given by

a) 50 m b) $50\sqrt{3}$ m c) $50\sqrt{2}$ m d) None of these

8. If the distance of any point P from the points $A(a+b, a-b)$ and $B(a-b, a+b)$ are equal, then the locus of P is

a) $x - y = 0$ b) $ax + by = 0$ c) $bx - ay = 0$ d) $x + y = 0$

9. The length of altitude through A of the ΔABC, where $A \equiv (-3, 0), B \equiv (4, -1), C \equiv (5, 2)$, is

a) $\frac{2}{\sqrt{10}}$ b) $\frac{4}{\sqrt{10}}$ c) $\frac{11}{\sqrt{10}}$ d) $\frac{22}{\sqrt{10}}$

10. Triangle ABC has vertices $(0, 0)$, $(11, 60)$ and $(91, 0)$. If the line $y = kx$ cuts the triangle into two triangles of equal area, then k is equal to

a) $\frac{30}{51}$ b) $\frac{4}{7}$ c) $\frac{7}{4}$ d) $\frac{30}{91}$

11. A pole stands at the centre of a rectangular field and it subtends angles of 15° and 45° at the mid points of the side of the field. If the length of its diagonal is 1200 m, then the height of flag staff is

a) 400 m b) 200 m c) $300\sqrt{2+\sqrt{3}}$ m d) $300\sqrt{2-\sqrt{3}}$ m

12. What is the equation of the locus a point which moves such that 4 times its distance from the x-axis is the square of its distance from the origin?

a) $x^2 - y^2 - 4y = 0$ b) $x^2 + y^2 - 4|y| = 0$ c) $x^2 + y^2 - 4x = 0$ d) $x^2 + y^2 - 4|x| = 0$

13. A person standing on the bank of a river, observe that the angle of elevation of the top of a tree on the opposite bank of the river is 60° and when he retries 40m a way from the tree the angle of elevation become 30°. The breadth of the river is

a) 20 m b) 30 m c) 40 m d) 60 m

14. There exist a ΔABC satisfying

a) $\tan A + \tan B + \tan C = 0$ b) $\frac{\sin A}{2} = \frac{\sin B}{3} = \frac{\sin C}{1}$

c) $\sin A + \sin B = -\left(\frac{\sqrt{3}+1}{2\sqrt{2}}\right)\cos A \cos B = \frac{\sqrt{3}}{4} = \sin A \sin B$

d) $(a+b)^2 = c^2 + ab$ and $\sqrt{2}(\sin A + \cos A) = \sqrt{3}$

15. From a point a meters above a lake the angle of elevation of a cloud is α and the angle of depression of its reflection is β. The height of the cloud is

a) $\frac{a\sin(\alpha+\beta)}{\sin(\alpha+\beta)}$m b) $\frac{a\sin(\alpha+\beta)}{\sin(\beta-\alpha)}$m c) $\frac{a\sin(\beta-\alpha)}{\sin(\alpha+\beta)}$ d) None of these

16. The orthocentre of the triangle formed by $(0, 0)$, $(8, 0)$, $(4, 6)$ is

a) $\left(4, \frac{8}{3}\right)$ b) $(3, 4)$c) $(4, 3)$d) $(-3, 4)$

17. The x-coordinate of the incentre of the triangle where the mid point of the sides are $(0, 1)$, $(1, 1)$ and $(1, 0)$, is

a) $2 + \sqrt{2}$ b) $1 + \sqrt{2}$ c) $2 - \sqrt{2}$ d) $1 - \sqrt{2}$

18. The locus of the point (x, y) which is equidistant from the points $(a + b, b - a)$ and $(a - b, a + b)$ is

a) $ax = by$ b) $ax + by = 0$ c) $bx + ay = 0$ d) $bx - ay = 0$

19. If the sum of the distances from two perpendicular lines in a plane is 1, then its locus is

a) A square
b) A circle
c) A straight line
d) Two intersecting lines

20. A tower of x metres high, has a flagstaff at its top. The tower and the flagstaff subtend equal angles at a point distant y metres from the foot of the tower. Then the length of the flagstaff (in meters), is

a) $\frac{y(x^2-y^2)}{(x^2+y^2)}$
b) $\frac{x(y^2+x^2)}{(y^2-x^2)}$
c) $\frac{x(x^2+y^2)}{(x^2-y^2)}$
d) $\frac{x(x^2-y^2)}{(x^2+y^2)}$