DPP

DAILY PRACTICE PROBLEMS

CLASS : XIth **SUBJECT : MATHS**

DATE : **DPP NO. : 1**

Topic :- CO-ORDINATE GEOMETRY

1. In ΔABC, $a^2(\cos^2 B - \cos^2 C) + b^2(\cos^2 C - \cos^2 A) + c^2(\cos^2 A - \cos^2 B)$ is equal to

a) 0 b) 1 c) $a^2 + b^2 + c^2$ d) $2(a^2 + b^2 + c^2)$

2. If $\sin A{:}\sin B{:}\sin C = 3{:}4{:}5$, then $\cos A{:}\cos B$ is equal to

a) 4:3 b) 5:3 c) 3:4 d) 3:5

3. If A, B, C are the angles of a triangle, then $\cot\frac{A}{2} + \cot\frac{B}{2} + \cot\frac{C}{2}$ is equal to

a) $\frac{s}{R}$ b) $\frac{R}{s}$ c) $\frac{\Delta}{s^2}$ d) $\frac{s^2}{\Delta}$

4. Coordinates of the foot of the perpendicular drawn from (0, 0) to the line joining $(a\cos\alpha, a\sin\alpha)$ and $(a\cos\beta, a\sin\beta)$ are

a) $\left(\frac{a}{2}, \frac{b}{2}\right)$ b) $\left(\frac{a}{2}(\cos\alpha + \cos\beta), \frac{a}{2}(\sin\alpha + \sin\beta)\right)$

c) $\left(\cos\frac{\alpha+\beta}{2}, \sin\frac{\alpha+\beta}{2}\right)$ d) $\left(0, \frac{b}{2}\right)$

5. Three points are $A(6, 3)$, $B(-3, 5)$, $C(4, -2)$ and $P(x, y)$ is a point, then the ratio of area of ΔPBC and ΔABC is

a) $\left|\frac{x+y-2}{7}\right|$ b) $\left|\frac{x-y+2}{2}\right|$ c) $\left|\frac{x-y-2}{7}\right|$ d) None of these

6. Two vertical poles 20 m and 80 m stands apart on a horizontal plane. The height of the point of intersection of the lines joining the top of each pole to the foot of the other is

a) 15 m b) 16 m c) 18 m d) 50 m

7. A person on a ship sailing north sees two lighthouses which are 6 km apart, in a line due west. After an hour's tailing one of them bears south west and the other southern south west. The ship is travelling at a rate of

a) 12 km/hr b) 6 km/hr c) $3\sqrt{2}$ km/hr d) $(6 + 3\sqrt{2})$ km/hr

8. If α,β, γ are the real roots of the equation
$x^3 - 3px^2 + 3qx - 1 = 0$,
Then the centroid of the triangle whose vertices are
$\left(\alpha, \frac{1}{\alpha}\right), \left(\beta, \frac{1}{\beta}\right)$ and $\left(\gamma, \frac{1}{\gamma}\right)$, is

a) (p,q) b) (q,p) c) $(-p,q)$ d) $(q,-p)$

9. If two vertices of a triangle are $(-2, 3)$ and $(5, -1)$. Orthocentre lies at the origin and centroid on the line $x + y = 7$, then the third vertex lies at

a) $(7, 4)$ b) $(8, 14)$ c) $(12, 21)$ d) None of these

10. What is the equation of the locus of 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) $x^2 + y^2 - 4|x| = 0$

11. If $a^2 + b^2 = c^2$, then $s(s-a)(s-b)(s-c)$ is equal to

a) a^2b^2 b) $\frac{1}{4}a^2b^2$ c) $\frac{1}{2}a^2b^2$ d) $\frac{1}{2}ab$

12. The harmonic conjugate of $(4, -2)$ with respect to $(2, -4)$ and $(7,1)$ is

a) $(-8, -14)$ b) $(2, 3)$ c) $(-2, -3)$ d) $(13, -5)$

13. If O is the origin and $P(x_1,y_1)$,$Q(x_2,y_2)$ are two points, then $OP.OQ\sin\angle POQ =$

a) $x_1x_2 + y_1y_2$ b) $x_1y_2 + x_2y_1$ c) $|x_1y_2 - x_2y_1|$ d) None of these

14. If $\Delta\, ABC$, if $a = 3$, $b = 4$, $c = 5$, then the value of $\sin 2B$ is

a) 4/5 b) 3/20 c) 24/25 d) 1/50

15. From an aeroplane vertically over a straight horizontal road, the angles of depression of two consecutive milestones on opposite sides of the aeroplane are observed to be α and β. The height of the aeroplane above the road is

a) $\frac{\tan\alpha + \tan\beta}{\tan\alpha\tan\beta}$ b) $\frac{\tan\alpha\tan\beta}{\tan\alpha + \tan\beta}$ c) $\frac{\cot\alpha\cot\beta}{\cot\alpha + \cot\beta}$ d) None of these

16. In $\Delta\, ABC$, if $\angle A = 45°$, $\angle B = 75°$, then $a + c\sqrt{2}$ is equal to

a) 0 b) 1 c) b d) $2b$

17. Three vertical poles of heights h_1,h_2 and h_3 at the vertices A, B and C of a ΔABC subtend angles α, β and γ respectively at the circumcentre of the triangle. If cot α,cot β and cot γ are in AP, then h_1, h_2, h_3 are in

a) AP b) GP c) HP d) None of these

18. The area enclosed within the curve $|x| + |y| = 1$ is

a) 1 sq unit b) $2\sqrt{2}$ sq units c) $\sqrt{2}$ sq units d) 2 sq units

19. P is a point on the segment joining the feet of two vertical poles of height a and b.The angles of elevation of the top of the poles from P are 45° each. Then, the squre of the distance between the top of the poles is

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

20. By rotating the coordinates axes through 30° in anticlockwise sense the equation $x^2 + 2\sqrt{3}\, xy - y^2 = 2a^2$ changes to

a) $X^2 - Y^2 = 3a^2$ b) $X^2 - Y^2 = a^2$ c) $X^2 - Y^2 = 2a^2$ d) None of these