RCCC-1

1. The opposite angular points of a square are (3, 4) and (1, –1). Then the coordinates of other two vertices are

(a) $D\left(\frac{1}{2},\frac{9}{2}\right); B\left(-\frac{1}{2},\frac{5}{2}\right)$ (b) $D\left(-\frac{1}{2},\frac{9}{2}\right); B\left(\frac{1}{2},\frac{5}{2}\right)$ (c) $D\left(\frac{9}{2},\frac{1}{2}\right); B\left(-\frac{1}{2},\frac{5}{2}\right)$ (d) None of these

2. Two vertices of a triangle are (4, –3) and (–2, 5). If the orthocentre of the triangle is at (1, 2), then the third vertex is

(a) (– 33, –26) (b) (33, 26) (c) (26, 33) (d) None of these

3. Two fixed points are $A(a,0)$ and $B(-a,0)$. If $\angle A-\angle B=\theta$, then the locus of point *C* of triangle *ABC* will be

(a) $x^2+y^2+2xy\tan\theta=a^2$ (b) $x^2-y^2+2xy\tan\theta=a^2$ (c) $x^2+y^2+2xy\cot\theta=a^2$ (d) $x^2-y^2+2xy\cot\theta=a^2$

4. Given the points $A(0,4)$ and $B(0,-4)$. Then the equation of the locus of the point $P(x,y)$ such that $|AP-BP|=6$, is

(a) $\frac{x^2}{7}+\frac{y^2}{9}=1$ (b) $\frac{x^2}{9}+\frac{y^2}{7}=1$ (c) $\frac{x^2}{7}-\frac{y^2}{9}=1$ (d) $\frac{y^2}{9}-\frac{x^2}{7}=1$

5. The coordinates of the points *O*, *A* and *B* are (0, 0), (0, 4) and (6, 0) respectively. If a point *P* moves such that the area of ΔPOA is always twice the area of ΔPOB, then the equation to both parts of the locus of *P* is

(a) $(x-3y)(x+3y)=0$ (b) $(x-3y)(x+y)=0$ (c) $(3x-y)(3x+y)=0$ (d) None of these

6. The area of the triangle formed by the lines $7x-2y+10=0, 7x+2y-10=0$ and $y+2=0$ is

(a) 8 sq. units (b) 12 sq. units (c) 14 sq. units (d) None of these

7. If $A(6,3), B(-3,5), C(4,-2)$ and $D(x,3x)$ are four points. If the ratio of area of ΔDBC and ΔABC is 1 : 2, then the value of *x* will be

(a) $\frac{11}{8}$ (b) $\frac{8}{11}$ (c) 3 (d) None of these

8. The orthocentre of the triangle formed by the lines $x+y=1$, $2x+3y=6$ and $4x-y+4=0$ lies in quadrant

(a) First (b) Second (c) Third (d) Fourth

9. The orthocentre of the triangle formed by the lines $4x-7y+10=0$, $x+y=5$ and $7x+4y=15$ is

(a) (1, 2) (b) (1, –2) (c) (–1, – 2) (d) (–1, 2)

10. If the vertices of triangle have integral coordinates then the triangle is

(a) Equilateral (b) Never equilateral (c) Isosceles (d) None of these

11. If $\begin{vmatrix} x_1 & y_1 & 1 \\ x_2 & y_2 & 1 \\ x_3 & y_3 & 1 \end{vmatrix} = \begin{vmatrix} a_1 & b_1 & 1 \\ a_2 & b_2 & 1 \\ a_3 & b_3 & 1 \end{vmatrix}$, then the two triangle with vertices $(x_1,y_1);(x_2,y_2);(x_3,y_3)$ and $(a_1,b_1);(a_2,b_2);(a_3,b_3)$ must be

(a) Similar (b) Congruent (c) Never congruent (d) None of these

12. All points lying inside the triangle formed by the points (1, 3), (5, 0) and (–1, 2) satisfy

(a) $3x+2y\ge 0$ (b) $2x+y-13\le 0$ (c) $2x-3y-12\le 0$ (d) All of these

13. The points (1, 3) and (5, 1) are the opposite vertices of a rectangle. The other two vertices lie on the line $y=2x+c$, then the value of *c* will be

(a) 4 (b) – 4 (c) 2 (d) – 2

14. If *O* be the origin and if the coordinates of any two points Q_1 and Q_2 be (x_1,y_1) and (x_2,y_2) respectively, then $OQ_1.OQ_2\cos Q_1OQ_2=$

(a) $x_1x_2-y_1y_2$ (b) $x_1y_1-x_2y_2$ (c) $x_1x_2+y_1y_2$ (d) $x_1y_1+x_2y_2$

15. If the line segment joining the points $A(a,b)$ and *B*(*c, d*) subtends an angle θ at the origin, then $\cos\theta$ is equal to

(a) $\frac{ab+cd}{\sqrt{(a^2+b^2)(c^2+d^2)}}$ (b) $\frac{ac+bd}{\sqrt{(a^2+b^2)(c^2+d^2)}}$ (c) $\frac{ac-bd}{\sqrt{(a^2+b^2)(c^2+d^2)}}$ (d) None of these