

- In a rhombus ABCD the diagonals AC and BD intersect at the points (3, 4). If the point A is (1, 2) the diagonal BD has the equation
 (a) $x - y - 1 = 0$ (b) $x + y - 1 = 0$
 (c) $x - y + 1 = 0$ (d*) $x + y - 7 = 0$
- The area enclosed within the curve $|x| + |y| = 1$, is
 (a) 1 sq. units (b*) 2 sq. units (c) 3 sq. units (d) 4 sq. units
- The locus of a point P which divides the line joining (1, 0) and $(2 \cos \theta, 2 \sin \theta)$ internally in the ratio 2 : 3 for all θ , is a
 (a) st. line (b*) circle (c) pair of st. lines (d) parabola
- A ray of light coming from the point (1, 2) is reflected at a point A on the x-axis and then passes through the point (5, 3). The coordinates of the point A are
 (a*) $\left(\frac{13}{5}, 0\right)$ (b) $\left(\frac{5}{12}, 0\right)$ (c) $\left(1, \frac{1}{2}\right)$ (d) $\left(\frac{1}{2}, 1\right)$
- The incentre of the triangle formed by the lines $x = 0$, $y = 0$ and $3x + 4y = 12$ is at
 (a) $\left(\frac{1}{2}, \frac{1}{2}\right)$ (b*) (1, 1) (c) $\left(1, \frac{1}{2}\right)$ (d) $\left(\frac{1}{2}, 1\right)$
- If one vertex of an equilateral triangle is at (2, -1) and the base is $x + y - 2 = 0$, then the length of each side is
 (a) $\sqrt{3}/2$ (b*) $\sqrt{2}/3$ (c) 2/3 (d) 3/2
- The equations of the lines through (-1, -1) and making angle 45° with the line $x + y = 0$ are given by
 (a) $x^2 - xy + x - y = 0$ (b) $xy - y^2 + x - y = 0$
 (c) $xy + x + y = 0$ (d*) $xy + x + y + 1 = 0$
- The orthocentre of the triangle formed by the lines $xy = 0$ and $x + y = 1$ is
 (a) (1/2, 1/2) (b) (1/3, 1/3) (c*) (0, 0) (d) (1/4, 1/4)
- A line passes through (2, 2) and is perpendicular to the line $3x + y = 3$. Its y-intercept is
 (a) 1/3 (b) 2/3 (c) 1 (d*) 4/3
- The distance between the parallel lines $y = 2x + 4$ and $6x = 3y + 5$ is
 (a) $\frac{17}{\sqrt{3}}$ (b) 1 (c) $\frac{3}{\sqrt{5}}$ (d*) $\frac{17\sqrt{5}}{15}$
- The line which is parallel to x-axis and crosses the curve $y = \sqrt{x}$ at an angle of 45° is
 (a) $x = 1/4$ (b) $y = 1/4$ (c*) $y = 1/2$ (d) $y = 1$
- P (3, 1), Q (6, 5) and R (x, y) are three points such that the angle PRQ is a right angle and the area of $\Delta RQP = 7$, then the number of such points R is
 (a) 0 (b) 1 (c*) 2 (d) 4
- The equation of the straight line which is perpendicular to $y = x$ and passes through (3, 2) will be given by
 (a) $x - y = 5$ (b*) $x + y = 5$ (c) $x + y = 1$ (d) $x - y = 1$
- The equation of the straight line passing through (1, 2) and perpendicular to $x + y + 1 = 0$ is
 (a) $y - x + 1 = 0$ (b*) $y - x - 1 = 0$
 (c) $y - x + 2 = 0$ (d) $y - x - 2 = 0$
- Given four lines with equations $x + 2y - 3 = 0$, $3x + 4y - 7 = 0$, $2x + 3y - 4 = 0$, $4x + 5y - 6 = 0$, then they are
 (a) all concurrent (b) the sides of a quadrilateral
 (c*) none of these

16. Orthocentre of the triangle whose sides are given by $4x - 7y + 10 = 0$, $x + y - 5 = 0$ and $7x + 4y - 15 = 0$ is
 (a) $(-1, -2)$ (b) $(1, -2)$ (c) $(-1, 2)$ (d*) $(1, 2)$
17. The line $(p + 2q)x + (p - 3q)y = p - q$ for different values of p and q passes through the fixed point
 (a) $\left(\frac{3}{2}, \frac{5}{2}\right)$ (b) $\left(\frac{2}{5}, \frac{2}{5}\right)$ (c) $\left(\frac{3}{5}, \frac{3}{5}\right)$ (d*) $\left(\frac{2}{5}, \frac{3}{5}\right)$
18. The distance between the lines $4x + 3y = 11$ and $8x + 6y = 15$ is
 (a) $7/2$ (b) 4 (c) $7/10$ (d*) none of these
19. The point $(4, 1)$ undergoes the following two successive transformations :
 (i) reflection about the line $y = x$
 (ii) rotation through a distance 2 units along the positive x -axis. Then the final coordinates of the point are
 (a) $(4, 3)$ (b) $(3, 4)$ (c*) $(1, 4)$ (d) $(7/2, 7/2)$
20. The orthocentre of the triangle formed by $(0, 0)$, $(8, 0)$ and $(4, 6)$ is
 (a) $(4, 8/3)$ (b*) $(3, 4)$ (c) $(4, 3)$ (d) $(-3, 4)$
21. The points $(0, 8/3)$, $(1, 3)$ and $(82, 30)$ are vertices of
 (a) an obtuse angled triangle (b*) an acute angled triangle
 (c) a right angled triangle (d) an isosceles triangle
22. The points $(0, -1)$, $(-2, 3)$, $(6, 7)$ and $(8, 3)$ are
 (a) collinear
 (b) vertices of a parallelogram which is not a rectangle
 (c*) vertices of a rectangle, which is not a square
 (d) none of these
23. If A and B are two points having coordinates $(3, 4)$ and $(5, -2)$ respectively and P is a point such that $PA = PB$ and area of triangle PAB = 10 square units, then the coordinates of P are
 (a) $(7, 4)$ or $(13, 2)$ (b) $(7, 2)$ or $(13, 4)$
 (c) $(2, 7)$ or $(4, 13)$ (d*) none of these
24. The coordinates of the middle points of the sides of a triangle are $(4, 2)$, $(3, 3)$ and $(2, 2)$, then the coordinates of its centroid are
 (a*) $(3, 7/3)$ (b) $(3, 3)$ (c) $(4, 3)$ (d) none of these
25. The incentre of the triangle whose vertices are $(-36, 7)$, $(20, 7)$ and $(0, -8)$ is
 (a) $(0, -1)$ (b*) $(-1, 0)$ (c) $(1/2, 1)$ (d) none of these
26. The locus of the mid-point of the portion intercepted between the axes by the line $x \cos \alpha + y \sin \alpha = p$, where p is a constant is
 (a*) $x^2 + y^2 = 4p^2$ (b) $\frac{1}{x^2} + \frac{1}{y^2} = \frac{4}{p^2}$ (c) $x^2 + y^2 = \frac{4}{p^2}$ (d) $\frac{1}{x^2} + \frac{1}{y^2} = \frac{2}{p^2}$
27. If A and B are two fixed points, then the locus of a point which moves in such a way that the angle APB is a right angle is
 (a*) a circle (b) an ellipse (c) a parabola (d) none of these
28. The nearest point on the line $3x - 4y = 25$ from the origin is
 (a) $(-4, 5)$ (b*) $(3, -4)$ (c) $(3, 4)$ (d) $(3, 5)$
29. The image of the point $(-1, 3)$ by the line $x - y = 0$ is
 (a) $(3, -1)$ (b*) $(1, -3)$ (c) $(-1, -1)$ (d) $(3, 3)$
30. If the sum of the distances of a point 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