

V. COORDINATE GEOMETRY

EXAMPLE PROBLEMS

- 1) Find the midpoint of the line segment joining the points (3, 0) and (-1, 4).
- 2) Find the point which divides the line segment joining the points (3, 5) and (8, 10) internally in the ratio 2:3.
- 3) In what ratio does the point P (-2, 3) divide the line segment joining the points A (-3, 5) and B (4, -9) internally?
- 4) Find the points of trisection of the line segment joining (4, -1) and (-2, -3)
- 5) Find the centroid of the triangle whose vertices are A (4, -6), B (3, -2) and C (5, 2).
- 6) If (7, 3), (6, 1), (8, 2) and (p , 4) are the vertices of a parallelogram taken in order, then find the value of p .
- 7) If C is the midpoint of the line segment joining A (4, 0) and B (0, 6) and if O is the origin, then show that C is equidistant from all the vertices of $\triangle OAB$.
- 8) Find the area of the triangle whose vertices are (1, 2), (-3, 4), and (-5, -6).
- 9) If the area of the $\triangle ABC$ is 68 sq. units and the vertices are A (6, 7), B (-4, 1) and C (a , -9) taken in order, then find the value of a .
- 10) Show that the points A (2, 3), B (4, 0) and C (6, -3) are collinear.
- 11) If $P(x, y)$ is any point on the line segment joining the points (a , 0) and (0, b), then, prove that $\frac{x}{a} + \frac{y}{b} = 1$ where $a, b \neq 0$.
- 12) Find the area of the quadrilateral formed by the points (-4, -2), (-3, -5), (3, -2) and (2, 3).
- 13) Find the angle of inclination of the straight line whose slope is $\frac{1}{\sqrt{3}}$
- 14) Find the slope of the straight line whose angle of inclination is 45° .
- 15) Find the slope of the straight line passing through the points (3, -2) and (-1, 4).
- 16) Using the concept of slope, show that the points A (5, -2), B (4, -1) and C (1, 2) are collinear.

- 17) Using the concept of slope, show that the points $(-2, -1)$, $(4, 0)$, $(3, 3)$ and $(-3, 2)$ taken in order form a parallelogram.
- 18) The vertices of a $\triangle ABC$ are $A(1, 2)$, $B(-4, 5)$ and $C(0, 1)$. Find the slopes of the altitudes of the triangle.
- 19) Find the equations of the straight lines parallel to the coordinate axes and passing through the point $(3, -4)$
- 20) Find the equation of straight line whose angle of inclination is 45° and y-intercept is $\frac{2}{5}$
- 21) Find the equation of the straight line passing through the point $(-2, 3)$ with slope $\frac{1}{3}$.
- 22) Find the equation of the straight line passing through the points $(-1, 1)$ and $(2, -4)$.
- 23) The vertices of a $\triangle ABC$ are $A(2, 1)$, $B(-2, 3)$ and $C(4, 5)$. Find the equation of the median through the vertex A .
- 24) If the x- intercept and y- intercept of a straight line are $\frac{2}{3}$ and $\frac{3}{4}$ respectively, then find the equation of the straight line.
- 25) Find the equations of the straight lines each passing through the point $(6, -2)$ and whose sum of the intercepts is 5.
- 26) Show that the straight lines $3x + 2y - 12 = 0$ and $6x + 4y + 8 = 0$ are parallel.
- 27) Prove that the straight lines $x + 2y + 1 = 0$ and $2x - y + 5 = 0$ are perpendicular to each other through the point $(2, 5)$.
- 28) The vertices of $\triangle ABC$ are $A(2, 1)$, $B(6, -1)$ and $C(4, 11)$. Find the equation of the straight line along the altitude from the vertex A .