

Co-ordinate Geometry

1. Distance between two points $P(x_1, y_1)$ and $Q(x_2, y_2)$ is given by:

$$d(P, Q) = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} \quad \{\text{Distance formula}\}$$

2. Distance of a point $P(x, y)$ from the origin is given by $d(0, P) = \sqrt{x^2 + y^2}$.
3. Equation of the x -axis is $y = 0$
4. Equation of the y -axis is $x = 0$
5. Equation of a straight line parallel to x -axis and passing through the point $P(a, b)$ is $y = b$.
6. Equation of a straight line parallel to y -axis and passing through the point $P(a, b)$ is $x = a$.
7. Slope of a straight line = $m = \tan \theta = \frac{y_2 - y_1}{x_2 - x_1}$ where (θ) is the inclination of the straight line and (x_1, y_1) and (x_2, y_2) are any two points on the line.
8. Equation of a line in the slope-intercept form is $y = mx + b$.
9. Equation of a straight line in point-slope form is $y - y_1 = m(x - x_1)$.
10. Equation of a straight line in two-points form is $\frac{y - y_1}{y_2 - y_1} = \frac{x - x_1}{x_2 - x_1}$.
11. Equation of a straight line in double-intercept form is: $\frac{x}{a} + \frac{y}{b} = 1$.
12. For a straight line whose equation is $ax + by + c = 0$
 - i) slope = $-\frac{a}{b}$
 - ii) y -intercept = $-\frac{c}{b}$
 - iii) x -intercept = $-\frac{c}{a}$.
13. The straight lines with slopes (m) and (m') are mutually perpendicular if $m, m' = -1$.
14. The straight line with slopes (m) and (m') are parallel to each other if $m = m'$.