



Coordinate Geometry:

A point is represented by its x, y coordinates: P (x , y)

The shortest distance between two points P (x₁, y₁) and Q (x₂, y₂):

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

Coordinates of the midpoint of a line segment with endpoints P (x₁, y₁) and Q (x₂, y₂):

$$M \left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2} \right)$$

Slope (gradient) of a line connecting 2 points P (x₁, y₁) and Q (x₂, y₂):

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

Linear function, given slope and y intercept:

$$y = mx + b, \text{ in which; } b \text{ stands for y intercept}$$

General form of linear function:

$$ax + by + c = 0$$

In which the slope is: $m = -\frac{a}{b}$, and the y intercept is: $y = -\frac{c}{b}$, (x = 0)

Linear function, given: the slope m and one point A(x₀ , y₀):

$$Y = m (x - x_0) + y_0$$