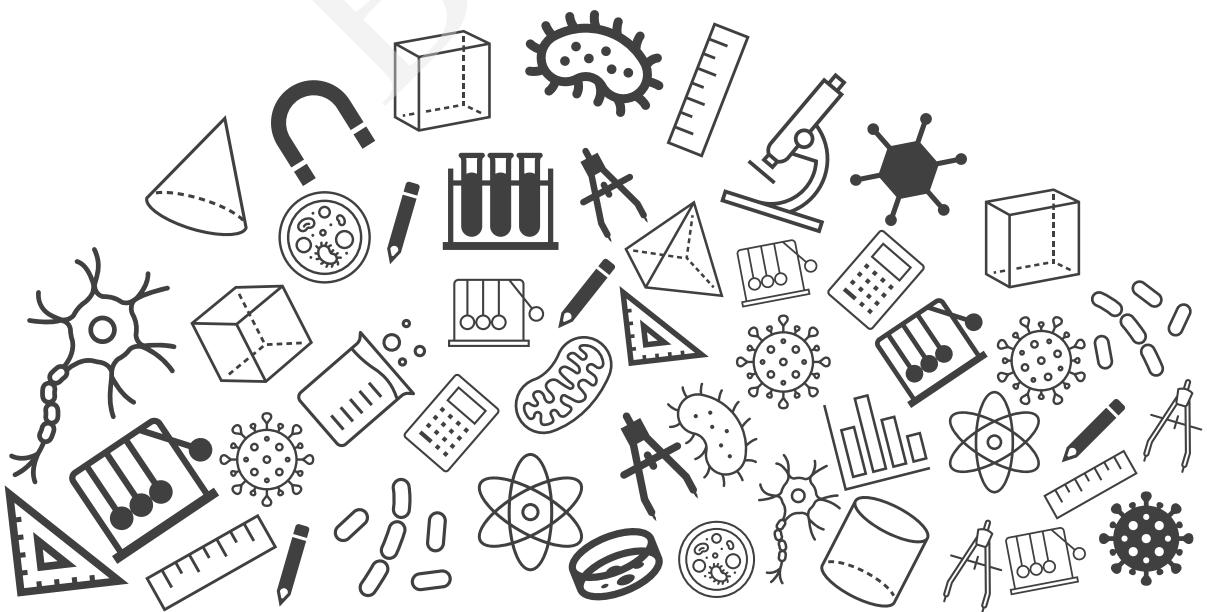




# Grade 10

## Mathematics Chapter Notes



M A T H E M A T I C S



# Coordinate Geometry





# Topics

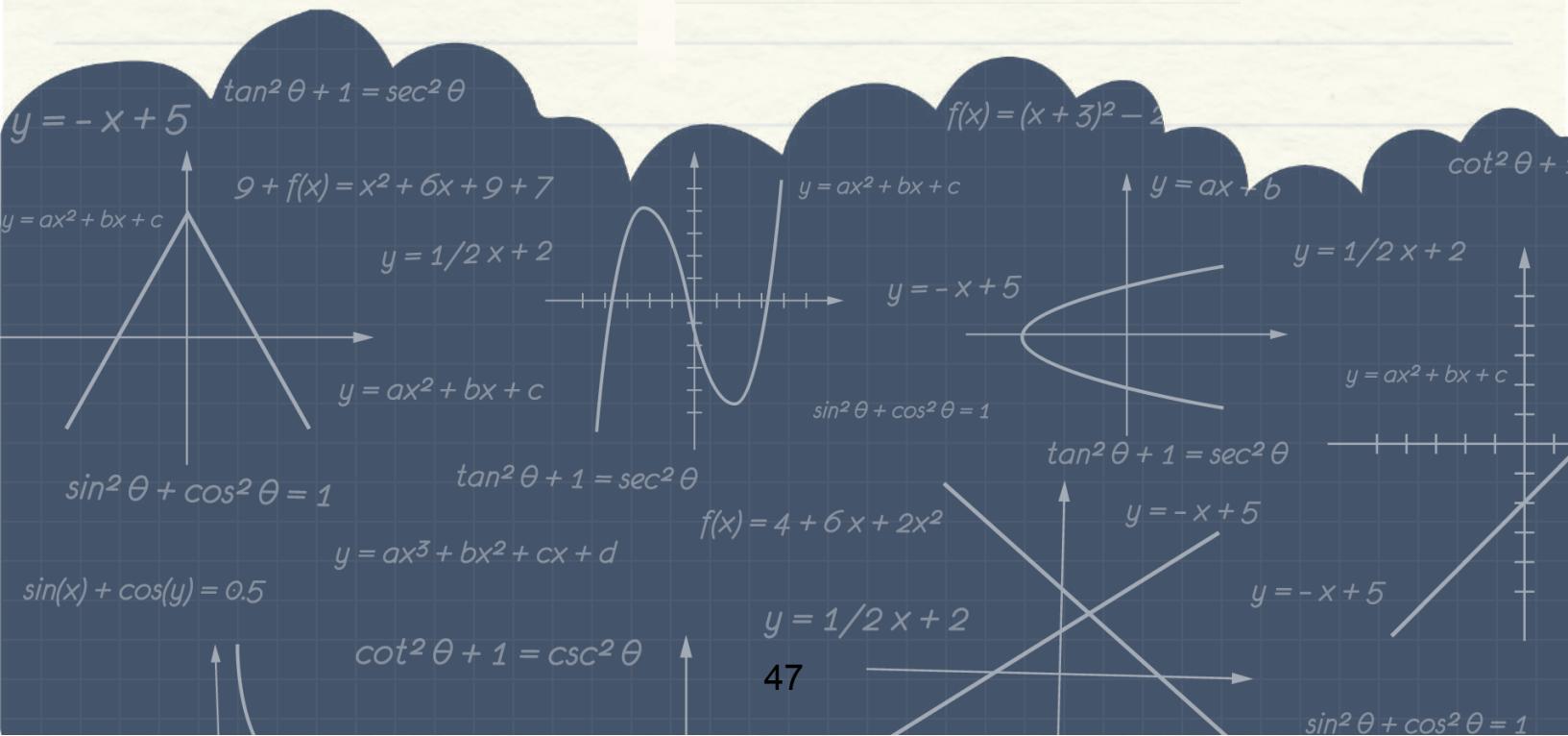


1. Fundamentals

2. Distance Formula

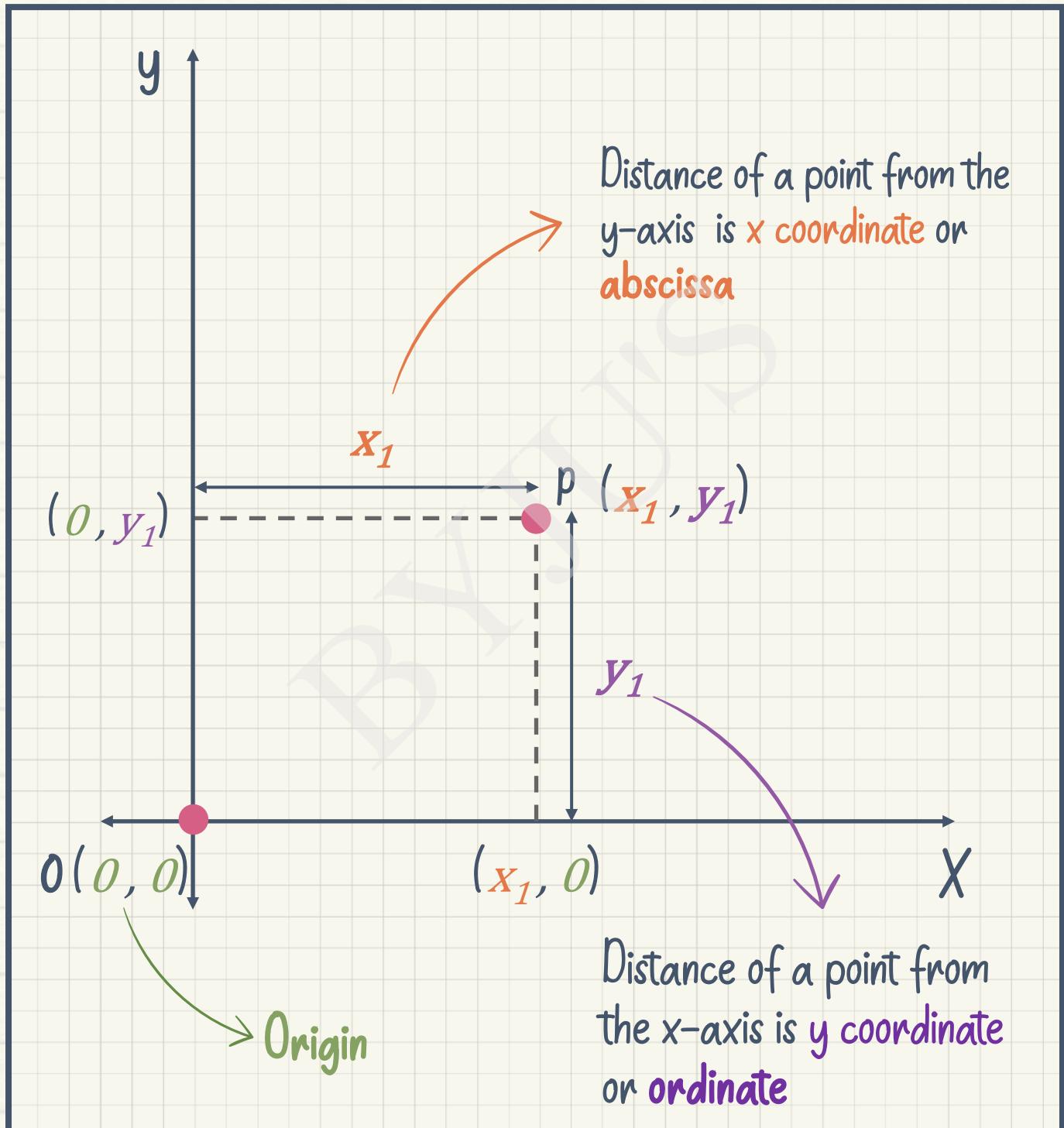
3. Section Formula

3.1 Mid-Point Formula



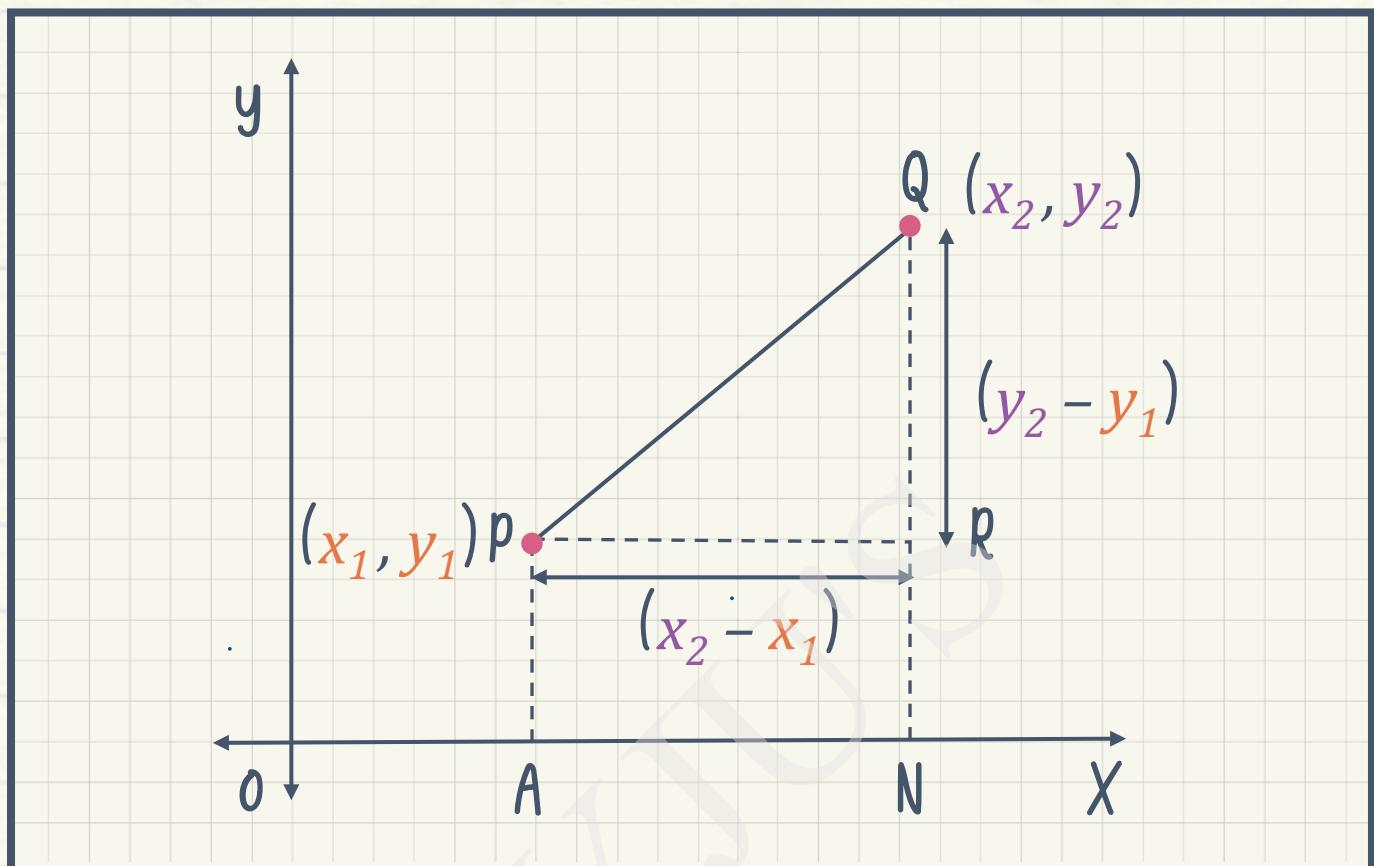


# Fundamentals





# Distance Formula



Steps to Derive

Using Pythagoras theorem:

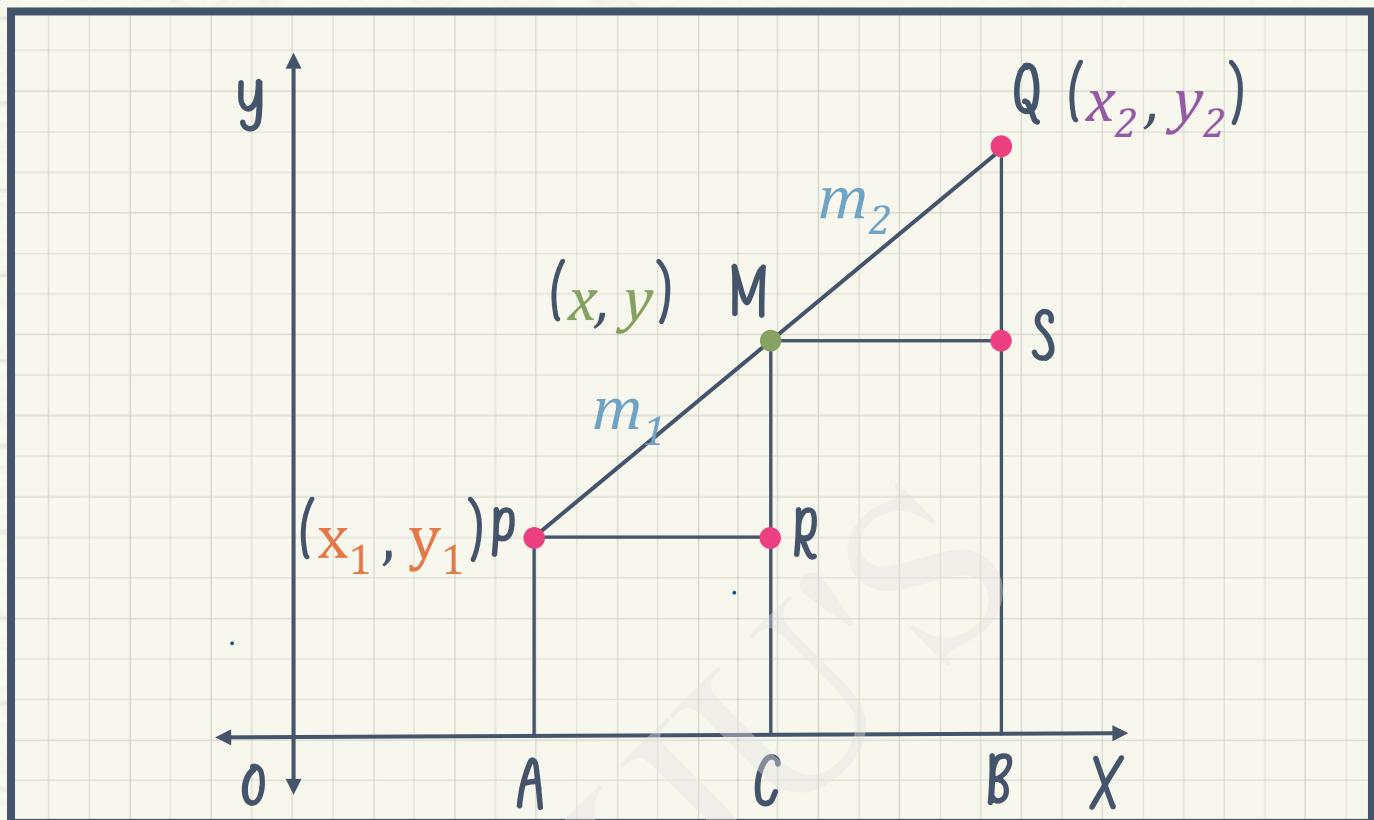
$$PQ = \sqrt{(PR)^2 + (QR)^2}$$

Now,  $PR = (x_2 - x_1)$  and  $QR = (y_2 - y_1)$

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



# Section Formula



Steps to Derive

$\triangle PRM \sim \triangle MSQ$  (Similar triangles)

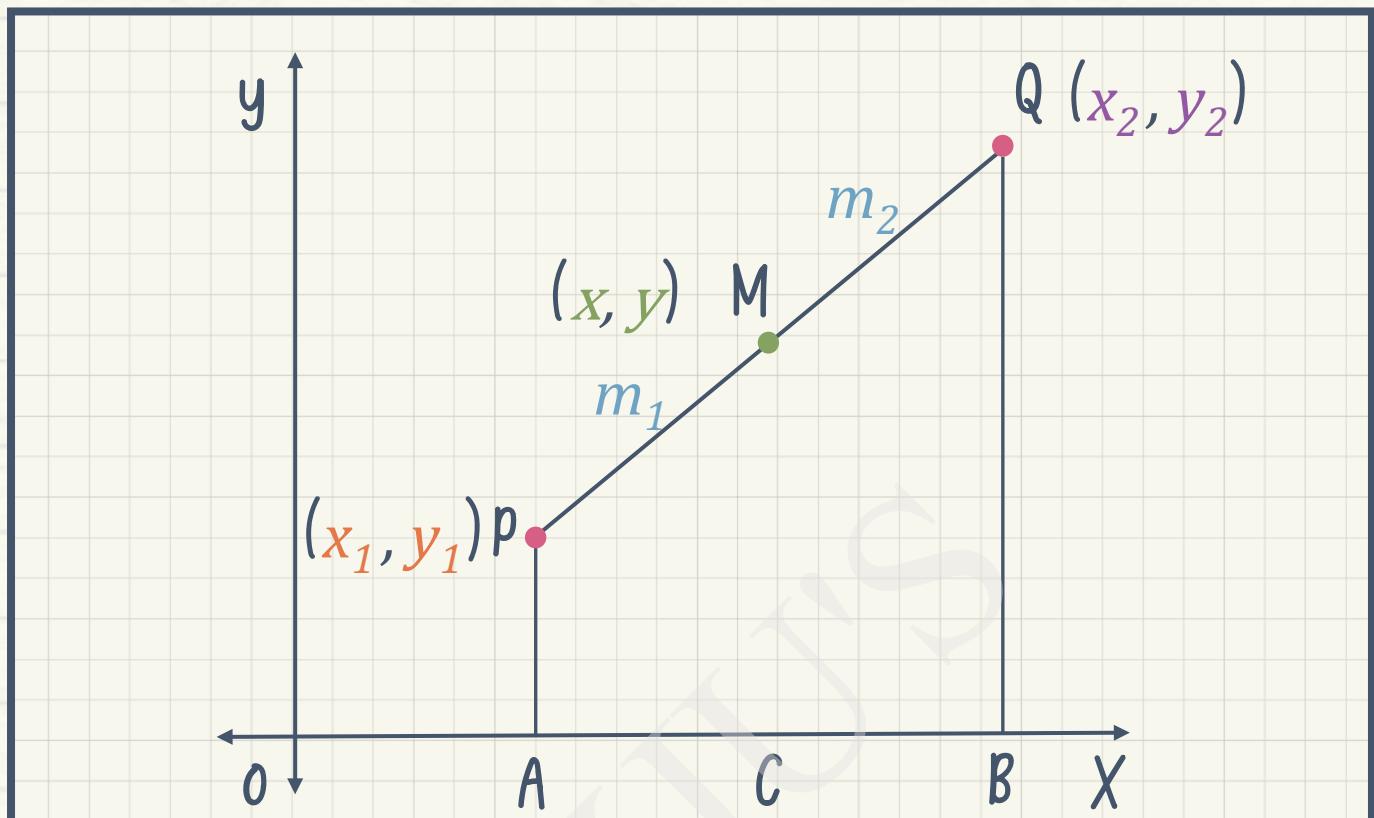
$$\frac{PM}{MQ} = \frac{PR}{MS} = \frac{RM}{SQ}$$

$$\frac{m_1}{m_2} = \frac{x - x_1}{x_2 - x} = \frac{y - y_1}{y_2 - y}$$

On solving for x and y separately:

$$M(x, y) = \left( \frac{m_1 x_2 + m_2 x_1}{m_1 + m_2}, \frac{m_1 y_2 + m_2 y_1}{m_1 + m_2} \right)$$

# Mid-Point Formula



## Steps to Derive

Section Formula

$$M(x, y) = \left( \frac{m_1 x_2 + m_2 x_1}{m_1 + m_2}, \frac{m_1 y_2 + m_2 y_1}{m_1 + m_2} \right)$$

$M$  is the mid point, so  $m_1 : m_2 = 1 : 1$

$$\therefore m_1 = 1 \text{ and } m_2 = 1$$

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



## Mind Map

Distance Formula

Coordinate  
Geometry

Section Formula

Mid-Point Formula