THE LINE (Q 2, PAPER 2)

LESSON NO. 3: MIDPOINT FORMULA

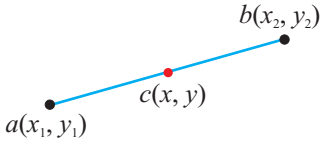
2007

2 (a) Find the co-ordinates of the mid-point of the line segment joining the points $(2, -3)$ and $(6, 9)$.

SOLUTION

The formula for the midpoint, c, of the line segment $[ab]$ is:

$$\text{Midpoint} = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right) \quad \ldots\ldots \; 2$$



REMEMBER THE MIDPOINT FORMULA AS: $\text{Midpoint} = \left(\frac{\text{Add the } x\text{'s}}{2}, \frac{\text{Add the } y\text{'s}}{2}\right)$

$$\begin{array}{cc} a(2, -3) & b(6, 9) \\ \downarrow \; \downarrow & \downarrow \; \downarrow \\ x_1 \quad y_1 & x_2 \quad y_2 \end{array}$$

$$\text{Midpoint} = \left(\frac{2+6}{2}, \frac{-3+9}{2}\right) = \left(\frac{8}{2}, \frac{6}{2}\right) = (4, 3)$$

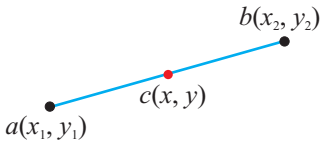
2004

2 (a) $p(5, -8)$ and $q(11, 10)$ are two points.
Find the co-ordinates of the midpoint of $[pq]$.

SOLUTION

The formula for the midpoint, c, of the line segment $[ab]$ is:

$$\text{Midpoint} = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right) \quad \ldots\ldots \; 2$$



REMEMBER THE MIDPOINT FORMULA AS: $\text{Midpoint} = \left(\frac{\text{Add the } x\text{'s}}{2}, \frac{\text{Add the } y\text{'s}}{2}\right)$

$$\begin{array}{cc} p(5, -8) & q(11, 10) \\ \downarrow \; \downarrow & \downarrow \; \downarrow \\ x_1 \quad y_1 & x_2 \quad y_2 \end{array}$$

$$\text{Midpoint} = \left(\frac{5+11}{2}, \frac{-8+10}{2}\right) = \left(\frac{16}{2}, \frac{2}{2}\right) = (8, 1)$$

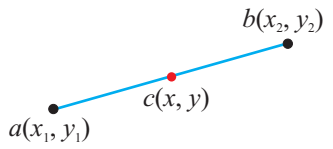
2000

2 (a) Find the coordinates of the midpoint of the line segment which joins the points (2, – 3) and (– 8, – 6).

SOLUTION

The formula for the midpoint, c, of the line segment $[ab]$ is:

$$\text{Midpoint} = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right) \quad \ldots\ldots \; 2$$



REMEMBER THE MIDPOINT FORMULA AS: $\text{Midpoint} = \left(\frac{\text{Add the } x\text{'s}}{2}, \frac{\text{Add the } y\text{'s}}{2}\right)$

$$\begin{array}{cccc} (2, & -3) & (-8, & -6) \\ \downarrow & \downarrow & \downarrow & \downarrow \\ x_1 & y_1 & x_2 & y_2 \end{array}$$

$$\text{Midpoint} = \left(\frac{2-8}{2}, \frac{-3-6}{2}\right) = \left(\frac{-6}{2}, \frac{-9}{2}\right) = (-3, -\tfrac{9}{2})$$