Midpoint Formula

Example : Find the midpoint of a line segment with the endpoints $\left(-3, \frac{1}{2}\right)$ and $(-1, -1)$.

$$\textbf{Midpoint} = \left(\frac{\textbf{x}_1 + \textbf{x}_2}{\textbf{2}}, \frac{\textbf{y}_1 + \textbf{y}_2}{\textbf{2}}\right) \quad x_1 = -3 \; ; \; x_2 = -1 \; ; \; y_1 = \frac{1}{2} \; ; \; y_2 = -1$$

$$= \left(\frac{-3-1}{2}, \frac{\frac{1}{2}-1}{2}\right)$$

$$= \left(\textbf{-2}, \frac{\textbf{-1}}{\textbf{4}}\right)$$

Find the midpoint of the line segments from the given endpoints.

1) $(5.6, -2.9)$ and $(3.2, -6.1)$

2) $\left(9, -\frac{5}{4}\right)$ and $(7, 1)$

3) $(-1, -4)$ and $(-4.5, -1.2)$

4) $\left(\frac{3}{4}, -7\right)$ and $\left(-\frac{1}{4}, -9\right)$

5) $\left(-\frac{8}{3}, \frac{9}{2}\right)$ and $\left(\frac{2}{3}, -\frac{1}{2}\right)$

6) $(-7, 3.7)$ and $(8, -1.3)$

Midpoint Formula

Answer key

Example : Find the midpoint of a line segment with the endpoints $\left(-3, \dfrac{1}{2}\right)$ and $(-1, -1)$.

$$\textbf{Midpoint} = \left(\dfrac{x_1 + x_2}{2}, \dfrac{y_1 + y_2}{2}\right) \qquad x_1 = -3 \; ; \; x_2 = -1 \; ; \; y_1 = \dfrac{1}{2} \; ; \; y_2 = -1$$

$$= \left(\dfrac{-3 - 1}{2}, \dfrac{\dfrac{1}{2} - 1}{2}\right)$$

$$= \left(\textbf{-2}, \dfrac{\textbf{-1}}{\textbf{4}}\right)$$

Find the midpoint of the line segments from the given endpoints.

1) $\quad$ (5.6, −2.9) and (3.2, −6.1)

$\quad$ **(4.4, −4.5)**

2) $\quad \left(9, -\dfrac{5}{4}\right)$ and (7, 1)

$\quad \left(\textbf{8}, -\dfrac{\textbf{1}}{\textbf{8}}\right)$

3) $\quad$ (−1, −4) and (−4.5, −1.2)

$\quad$ **(−2.75, −2.6)**

4) $\quad \left(\dfrac{3}{4}, -7\right)$ and $\left(-\dfrac{1}{4}, -9\right)$

$\quad \left(\dfrac{\textbf{1}}{\textbf{4}}, \textbf{−8}\right)$

5) $\quad \left(-\dfrac{8}{3}, \dfrac{9}{2}\right)$ and $\left(\dfrac{2}{3}, -\dfrac{1}{2}\right)$

$\quad$ **(−1, 2)**

6) $\quad$ (−7, 3.7) and (8, −1.3)

$\quad \left(\dfrac{\textbf{1}}{\textbf{2}}, \textbf{1.2}\right)$