

Midpoint Formula

Sheet 3

Example : Find the other endpoint of the line segment with the endpoint $(-1, 7)$ and the midpoint $(4, 5)$.

$$\text{Midpoint} = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right) \Rightarrow (4, 5) = \left(\frac{-1 + x_2}{2}, \frac{7 + y_2}{2} \right)$$

$$\Rightarrow 4 = \left(\frac{-1 + x_2}{2} \right), 5 = \left(\frac{7 + y_2}{2} \right) \Rightarrow 8 = -1 + x_2, 10 = 7 + y_2$$

$$(9, 3) = (x_2, y_2)$$

Find the other endpoint:

1) Endpoint : $(2, 7)$, r

t and midpoint.

 $(9, -4)$, midpoint : $(-7, -3)$

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3) Endpoint : $(10, 3)$, $(12, 8)$, midpoint : $(5, 8)$ 5) Endpoint : $(8, -12)$ $(1, 7)$, midpoint : $(-3, 4)$ 7) Endpoint : $(-1, -12)$, midpoint : $(0, -5)$ 8) Endpoint : $(10, 3)$, midpoint : $(8, 6)$