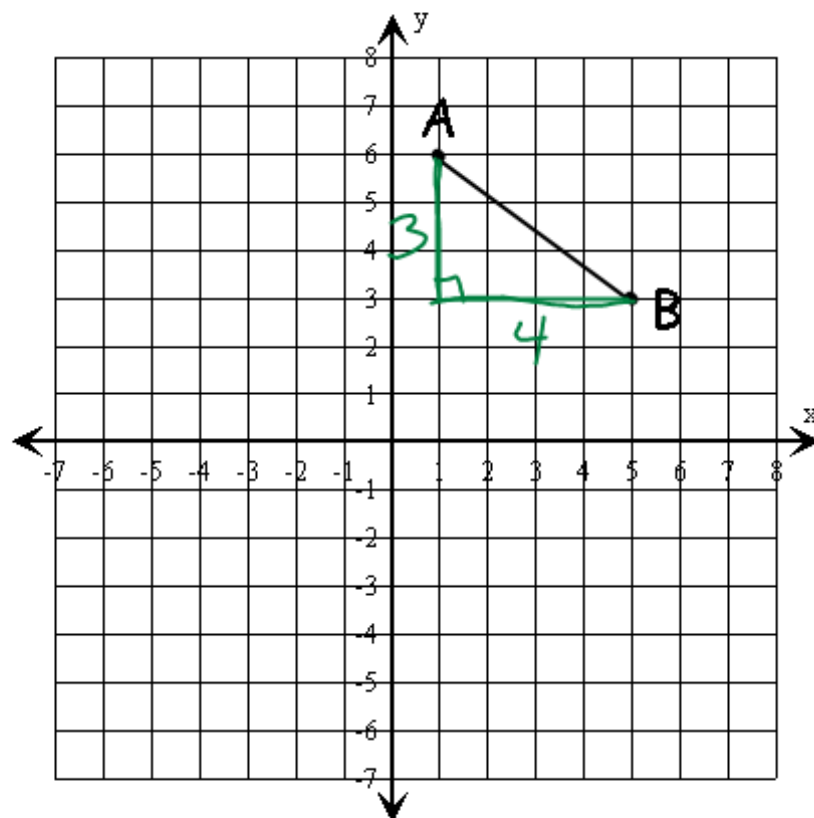


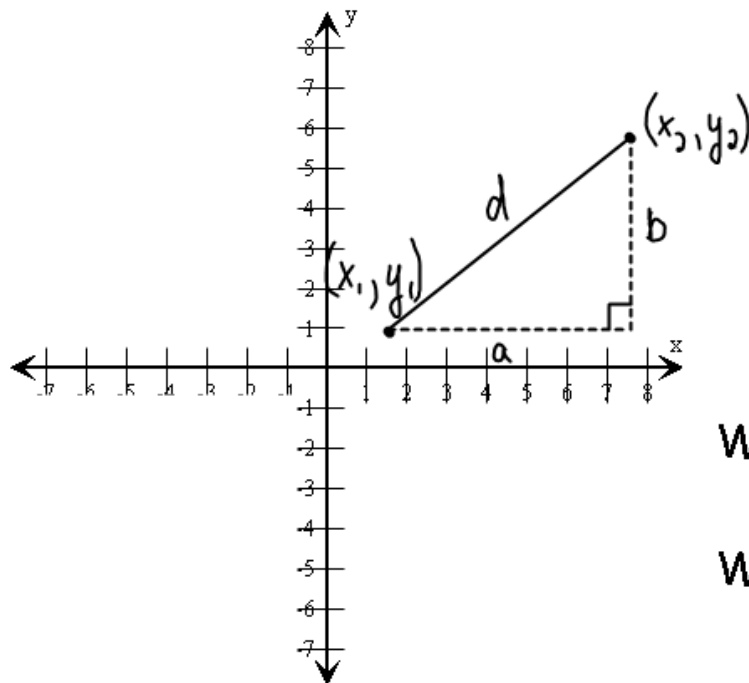
Distance, Midpoint, and Slope formulas:



$$\begin{aligned}a^2 + b^2 &= c^2 \\3^2 + 4^2 &= c^2 \\ \sqrt{25} &= \sqrt{c^2} \\ \boxed{5} &= c\end{aligned}$$

How long is segment AB?

****Use what you know....you have the skills to do this.****



What is a in terms of x ?

$$a = x_2 - x_1$$

What is b in terms of y ?

$$b = y_2 - y_1$$

Pythagorean Theorem: $a^2 + b^2 = c^2$

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

Distance Formula:

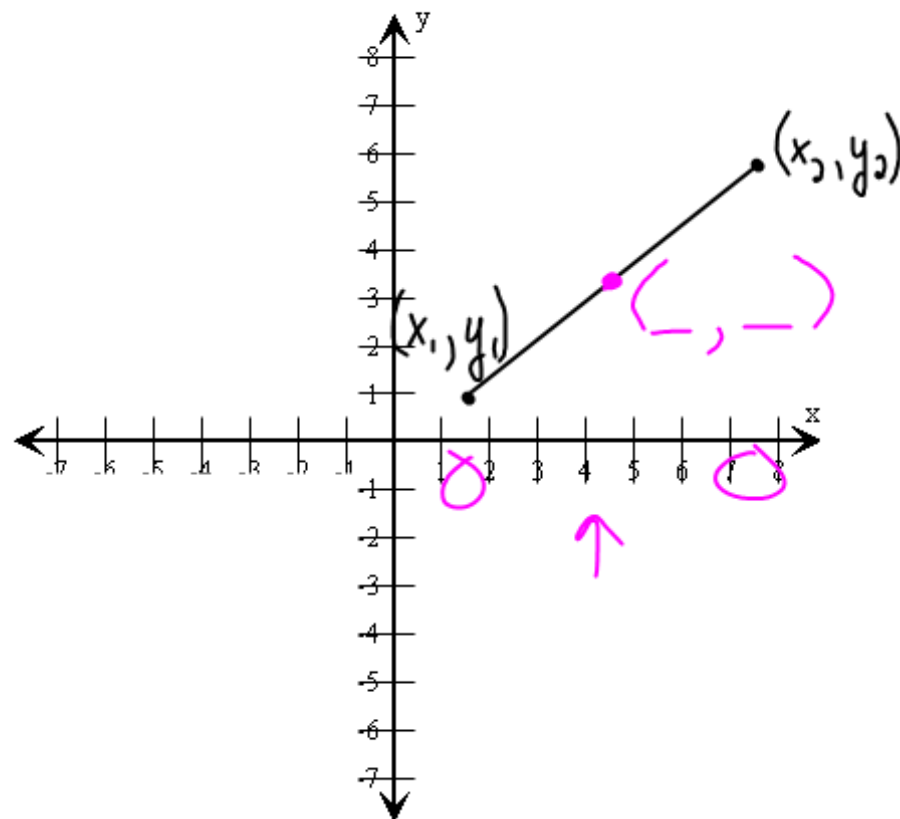
$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

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

Use the distance formula to find the distance between the pair of points:

$A(4, 2), B(-3, 0)$
 $x_1 \ y_1 \quad x_2 \ y_2$

$$\begin{aligned} d &= \sqrt{(-3 - 4)^2 + (0 - 2)^2} \\ &= \sqrt{(-7)^2 + (-2)^2} \\ &= \sqrt{49 + 4} \\ d &= \sqrt{53} \end{aligned}$$



How might we find the midpoint of the segment above?

****Hint: start with finding what the x-value would be for your midpoint ordered pair****

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

Midpoint formula:

Midpoint formula:

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

Find the coordinates of the midpoint of a segment
having the given endpoints:

$$X(8, 3); Y(-4, 2)$$

$$\begin{matrix} x_1 & y_1 & x_2 & y_2 \end{matrix} \left(\frac{8 + -4}{2}, \frac{3 + 2}{2} \right) = \boxed{\left(2, \frac{5}{2} \right)}$$

Slope formula:

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

Find the slope of the line that passes through each pair of points.

$$R(-3, 4) M(4, 0)$$

$$\begin{matrix} x_1 & y_1 & x_2 & y_2 \end{matrix} m = \frac{0 - 4}{4 - -3} = \boxed{\frac{-4}{7}}$$