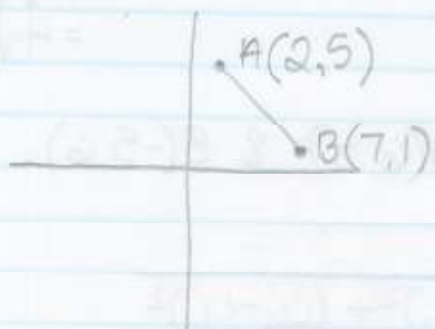


September 21<sup>st</sup>, 2007

## Midpoint & Length

### MIDPOINT



Find midpoint of  $\overline{AB}$

$$\text{Midpt } \overline{AB} = \left( \frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

$$= \left( \frac{2+7}{2}, \frac{5+1}{2} \right)$$

$$= \left( \frac{9}{2}, 3 \right)$$

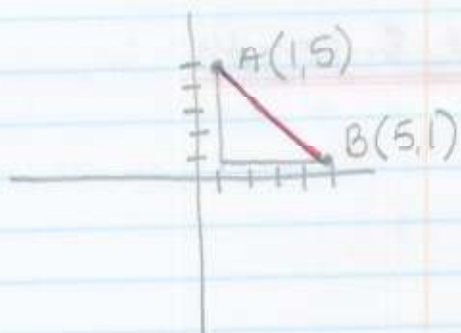
Find midpoint of  $\overline{CD}$  for  $C(-3, -2)$   $D(-2, 5)$

$$\text{midpt. } \overline{CD} = \left( \frac{-3 + (-2)}{2}, \frac{-2 + 5}{2} \right)$$

$$= \left( \frac{5}{2}, \frac{3}{2} \right)$$

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

## LENGTH



Find length of  $\overline{AB}$

$$\begin{aligned}\text{length } \overline{AB} &= \sqrt{a^2 + b^2} \\ &= \sqrt{(4)^2 + (4)^2} \\ &= \sqrt{16 + 16} \\ &= \sqrt{32} \\ &= 4\sqrt{2}\end{aligned}$$

Find length  $\overline{AB}$  if  $A(6, 4)$  &  $B(-5, 6)$

$$\begin{aligned}\text{length } \overline{AB} &= \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} \\ &= \sqrt{(-5 - 6)^2 + (6 - 4)^2} \\ &= \sqrt{(-11)^2 + (2)^2} \\ &= \sqrt{121 + 4} \\ &= \sqrt{125}\end{aligned}$$

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