The Distance Formula

The distance formula is used to …

- find the distance between two points
- find the length of a segment
- find the distance between a point and a line

The Distance Formula:

The distance d between any two points (x_1, y_1) and (x_2, y_2) is

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

This is how it's done …

EXAMPLE 1: Find the distance between (5, 2) and (3, 8).

Step 1: Label your points (5, 2) and (3, 8)

Step 2: Substitute into formula $d = \sqrt{(\quad - \quad)^2 + (\quad - \quad)^2}$

Step 3: Perform correct operations! $d = \sqrt{(\quad)^2 + (\quad)^2}$

$d =$

$d =$

$d =$

The Mid-point Formula

The midpoint formula is used to …

- find the midpoint between two points
- find the midpoint of a segment

The Midpoint Formula:

The midpoint M of the line segment with endpoints $A(x_1, y_1)$ and $B(x_2, y_2)$ is

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

This is how it's done …

EXAMPLE 1: Find the midpoint of the line segment with endpoints (14, 3) and (6, 9).

Step 1: Label your points (14, 3) and (6, 9)

Step 2: Substitute into formula $M = \left(\frac{+}{2}, \frac{+}{2} \right)$

Step 3: Perform operations! $M = \left(\frac{\quad}{2}, \frac{\quad}{2} \right)$

$M = (\quad , \quad)$