

SM2 FORMULAS 7-1 (Midpoint Formula)

Midpoint formula is used to find the midpoint of a segment that is on the (x, y) plane.

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

The midpoint x-coordinate is the average of the x-coordinates of the two end points.

The midpoint y-coordinate is the average of the y-coordinates of the two endpoints.

The order of x_1 and x_2 does not matter because of the Commutative property of addition.

Example: Find the midpoint between (-3, -6) and (6, -11) $\rightarrow \left(\frac{-3 + 6}{2}, \frac{-6 + (-11)}{2} \right) \rightarrow \left(\frac{3}{2}, \frac{-17}{2} \right)$

Find the midpoint of segment AB is (4, -2) and one endpoint is (11, -5). What is the other endpoint?

$$\left(\frac{x_1 + 11}{2}, \frac{y_1 - 5}{2} \right) = (4, -2)$$

$$\frac{x_1 + 11}{2} = 4$$

$$\boxed{x_1 = -3}$$

$$\frac{y_1 - 5}{2} = -2$$

$$\boxed{y_1 = 1}$$