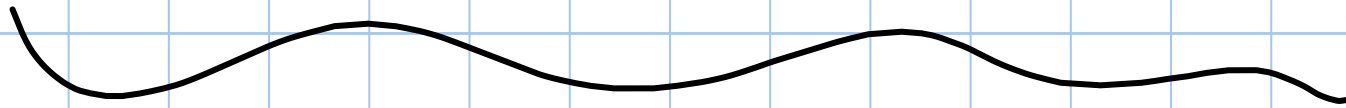


Midpoint

Formula



What is the
number halfway
between 3 and 5?

Solution: The
number is 4.

How could you
arrive at 4
with the numbers
3 and 5? You
would find the

Average of 3 & 5.

$$\frac{3+5}{2} = \frac{8}{2} = 4$$

This concept extends
to two dimensions.

To find the
midpoint of

(3, 1) and (5, 3),

you will average

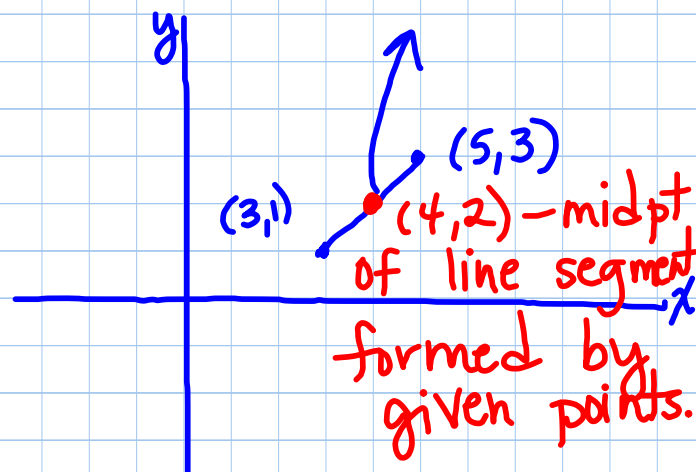
the x : average
the y : coordinates.

The midpoint of
 $(3,1)$ and $(5,3)$ is

$$\left(\frac{3+5}{2}, \frac{1+3}{2} \right)$$

$$\left(\frac{8}{2}, \frac{4}{2} \right)$$

$$(4,2)$$



The midpoint
formula is

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

where

$$(x_1, y_1) \text{ ; } (x_2, y_2)$$

are two given
points.

One more ex.:

Find the midpoint
of line segment
formed by

$$\overset{x_1}{(-4, \overset{y_1}{7})} \text{ and } \overset{x_2}{(3, \overset{y_2}{-5})}.$$

Solution $(\underline{-4}, \underline{7}) ; (\underline{3}, \underline{-5})$

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

$$M\left(\frac{-4+3}{2}, \frac{7+(-5)}{2}\right)$$

$$M\left(-\frac{1}{2}, 1\right)$$