S(4,5)

c

$b=5$

$a^2+b^2=c^2$

$c^2 = 4^2 + 5^2$

$c^2 = 16 + 25$

$c^2 = 41$

$c = 6.4$

H(0,0)

$a = 4$ (4,0)

DISTANCE BETWEEN TWO POINTS

Formula:

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

STEPS:
1. Label the two points with (x1, y1) and (x2, y2)
2. Replace them in the formula
3. Calculate (be careful for the two consecutive negatives)
4. Remember the number under the square root can never be negative

$$x_1 \; y_1 \quad x_2 \; y_2$$

Ex 1: Find the distance between these two points: (3, 2) and (8, 9)

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

$$= \sqrt{(8-3)^2 + (9-2)^2} = \sqrt{25 + 49}$$

$$= \sqrt{74} = 8.6$$

Ex 2: Find the distance between these two points: (-2, 1) and (4, 3)

$$x_1 \; y_1 \quad x_2 \; y_2$$

① $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

② $d = \sqrt{(4 - -2)^2 + (3 - 1)^2}$
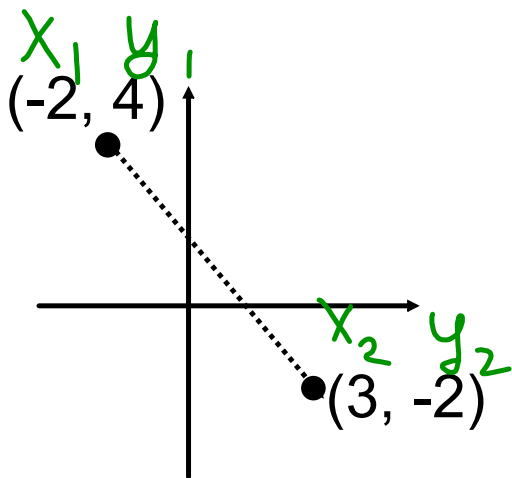
$d = \sqrt{(6)^2 + (2)^2}$

$d = \sqrt{36 + 4}$

$d = \sqrt{40}$

③ $d = 6.32$

Ex 3: Find the distance between these two points.

$x_1 \quad y_1$

$(-2, 4)$

$x_2 \quad y_2$

$(3, -2)$

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

$$= \sqrt{(3 - -2)^2 + (-2 - 4)^2}$$

$$= \sqrt{5^2 + (-6)^2}$$

$$= \sqrt{25 + 36} = \sqrt{61} = 7.81$$