

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

- ① subtract x 's subtract y 's
- ② square it square it
- ③ add together
- ④ square root (fully simplify)

ex Find the distance between the points $(-4, 7)$ and $(2, -1)$.

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

$$D = \sqrt{(2 - (-4))^2 + (-1 - 7)^2}$$

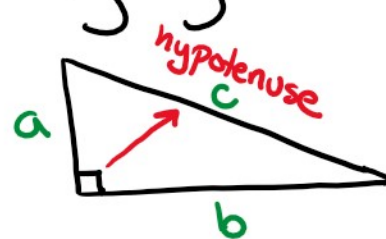
$$D = \sqrt{(6)^2 + (-8)^2}$$

$$D = \sqrt{36 + 64}$$

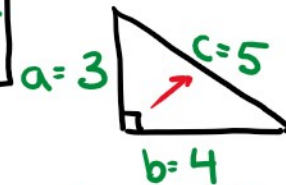
$$D = \sqrt{100} \leftarrow \text{perfect square}$$

$$D = 10$$

Pythagorean Theorem:



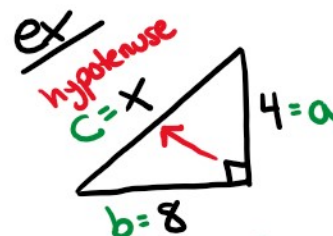
$$a^2 + b^2 = c^2$$



$$3^2 + 4^2 = 5^2$$

$$9 + 16 = 25$$

$$25 = 25 \checkmark$$



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

$$4^2 + 8^2 = x^2$$

$$16 + 64 = x^2$$

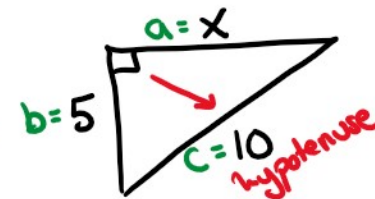
KEY STEP

$$\sqrt{80} = \sqrt{x^2}$$

$$\sqrt{80} = x$$

$$\sqrt{16} \sqrt{5} = x$$

$$4\sqrt{5} = x$$



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

$$x^2 + 5^2 = 10^2$$

$$x^2 + 25 = 100$$

KEY STEP

$$\sqrt{x^2} = \sqrt{75}$$

$$x = \sqrt{75}$$

$$\sqrt{25} \sqrt{3}$$

$$x = 5\sqrt{3}$$