Solving an equation graphically!
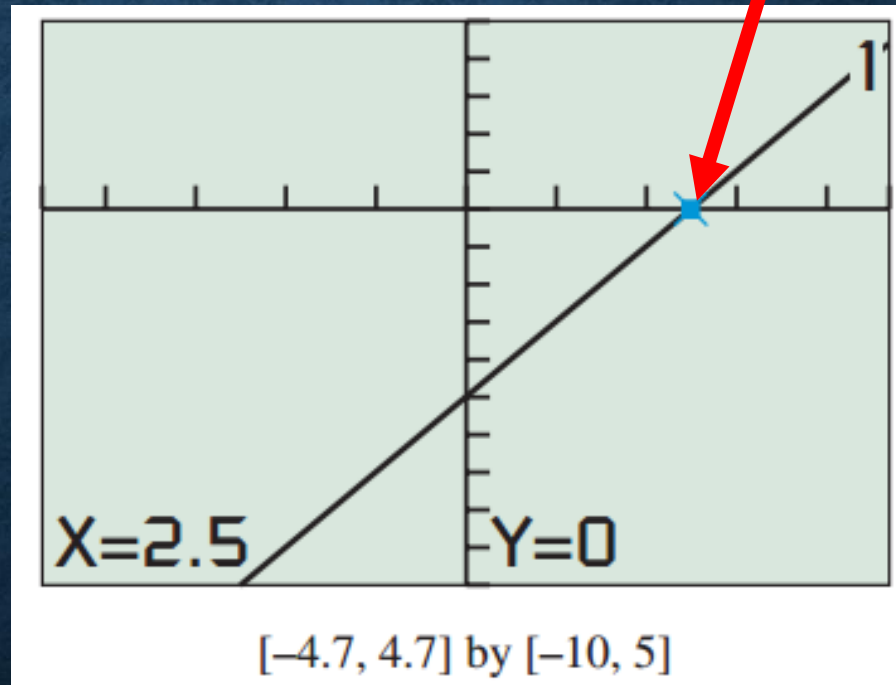
$$2x - 5 = 0$$

Substitute *y* for 0 and graph the function!

Find the zero or "root" of the function!

X=2.5   Y=0
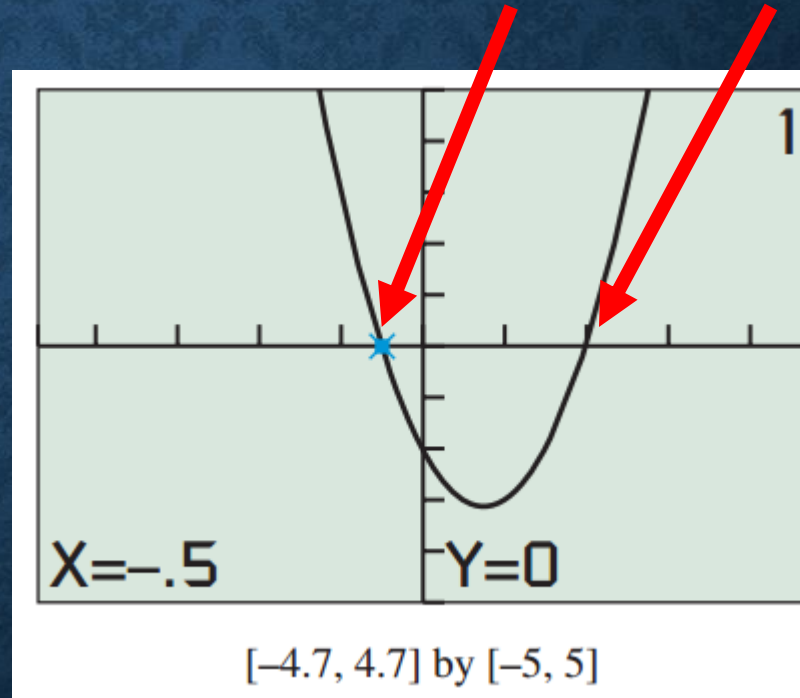
[–4.7, 4.7] by [–10, 5]

Solving by Finding *x*-Intercepts

Solve the equation $2x^2 - 3x - 2 = 0$ graphically.

$$y = 2x^2 - 3x - 2$$

Substitute *y* for 0 and graph the function!

Algebraically………

Find the *x*-intercepts function!

X=−.5   Y=0

[−4.7, 4.7] by [−5, 5]

Zero Factor Property

Let a and b be real numbers.

$$\text{If } ab = 0, \text{ then } a = 0 \text{ or } b = 0.$$

DEFINITION Quadratic Equation in x

A **quadratic equation in x** is one that can be written in the form

$$ax^2 + bx + c = 0,$$

where a, b, and c are real numbers with $a \neq 0$.

SQUARE ROOT PRINCIPLE

If $t^2 = K > 0$, then $t = \sqrt{K}$ or $t = -\sqrt{K}$.

Solving by Extracting Square Roots

Solve $(2x - 1)^2 = 9$ algebraically.

Completing the Square

To solve $x^2 + bx = c$ by **completing the square**, add $(b/2)^2$ to both sides of the equation and factor the left side of the new equation.

$$x^2 + bx + \left(\frac{b}{2}\right)^2 = c + \left(\frac{b}{2}\right)^2$$

$$\left(x + \frac{b}{2}\right)^2 = c + \frac{b^2}{4}$$

Solving by Completing the Square

Solve $4x^2 - 20x + 17 = 0$ by completing the square.