C11 - 8.2 - Linear/Quadratic Systems Substitution Notes

Solve by Substitution.

$y = x + 1$ $\qquad\qquad$ $y = x^2 - 1$ $\qquad\qquad$ Equation 1 $\qquad\qquad$ Equation 2

$$x + 1 = x^2 - 1$$
$$-1 - 1$$
$$x = x^2 - 2$$
$$-x - x$$
$$0 = x^2 - x - 2$$
$$0 = (x+1)(x-2)$$

Equation 1 = Equation 2

Equation #3

$$\boxed{x = -1, 2}$$

Solve for x

$y = x + 1$ $\qquad\qquad$ $y = x + 1$

$y = (-1) + 1$ $\qquad\quad$ $y = (2) + 1$ $\qquad$ Solve for y $\qquad\qquad$ Solve for y

$y = 0$ $\qquad\qquad\qquad$ $y = 3$

$\qquad\qquad\qquad\qquad\qquad\qquad\qquad$ Intersection #1 $\qquad\qquad$ Intersection #2

$(-1, 0)$ $\qquad\qquad\qquad$ $(2, 3)$

Solve by graphing.

$y = x + 1$ $\qquad\qquad$ Equation 1

$y = x^2 - 1$ $\qquad\qquad$ Equation 2

$(-1, 0)$ $\qquad\qquad\qquad$ $(2, 3)$
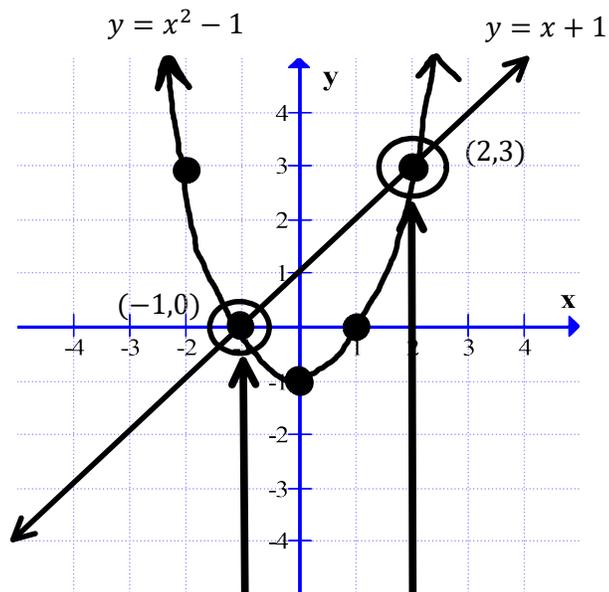
$y = (x + 1)(x - 2)$ $\qquad\qquad$ Equation #3

$x + 1 = 0$ $\qquad$ $x - 2 = 0$

$\quad x = -1$ $\qquad\quad$ $x = 2$
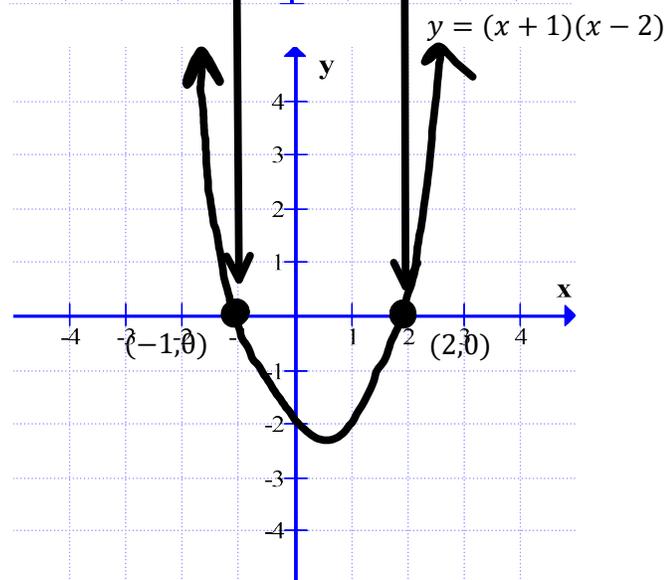
Notice the graph of the third equation x-intercepts is the x answer to the question.