

Lesson 3.3.3: Using Graphs to Solve Equations

Targets:

1. I understand how to use graphs to solve equations.

Warm Up:

Go to Khan Academy and work on the activity called “Graphs of Absolute Value Functions.” Make sure you get 5 right in a row before moving on from here.

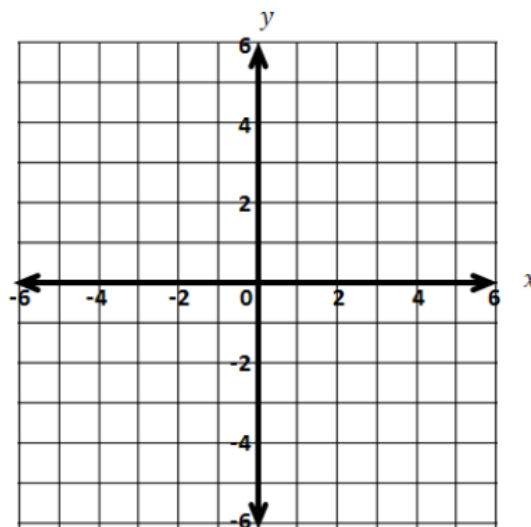
Practice 1

1. Solve for x in the following equation: $|x + 2| - 3 = 0.5x + 1$.

2. Now let $f(x) = |x + 2| - 3$ and $g(x) = 0.5x + 1$. When does $f(x) = g(x)$?

- a. Graph $y = f(x)$ and $y = g(x)$ on the same set of axes.

- b. When does $f(x) = g(x)$? What is the visual significance of the points where $f(x) = g(x)$?



Practice 2

Solve this equation by graphing two functions on the same Cartesian plane: $-|x - 3| + 4 = |0.5x| - 5$.

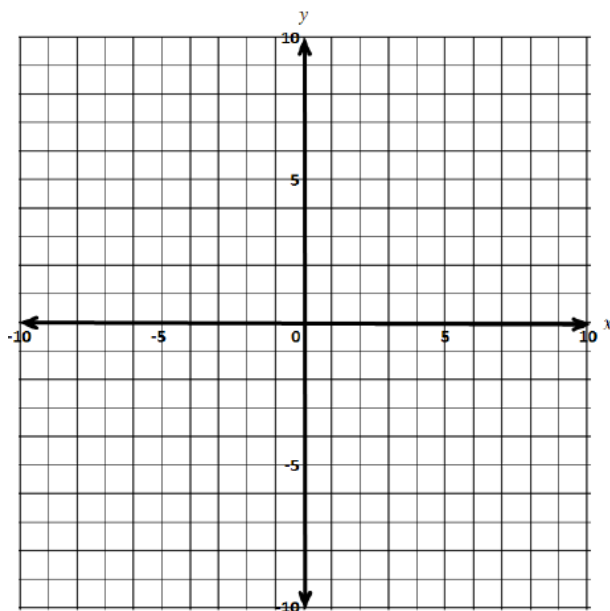
Let $f(x) = -|x - 3| + 4$ and $g(x) = |0.5x| - 5$

- a. From the graph, we see that the two intersection points are _____ and _____.

- b. The fact that the graphs of the functions meet at these two points means that when x is _____ both $f(x)$ and $g(x)$ are _____, or when x is _____ both $f(x)$ and $g(x)$ are _____.

- c. Thus, the expressions $-|x - 3| + 4$ and $|0.5x| - 5$ are equal when $x =$ _____ or when $x =$ _____.

- d. Therefore, the solution set to the original equation is _____.



Practice 3

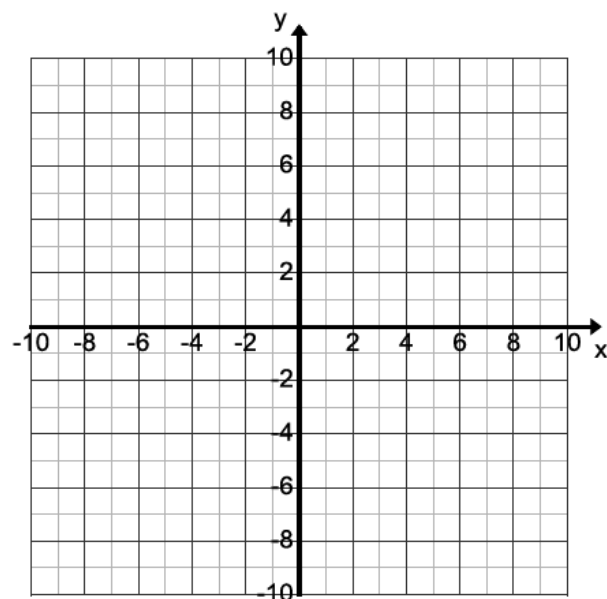
Solve this equation graphically: $-|x - 3.5| + 4 = -0.25x - 1$.

a. Write the two functions represented by each side of the equation.

b. Graph the functions in an appropriate viewing window.

c. Determine the intersection points of the two functions.

d. Verify that the x -coordinates of the intersection points are solutions to the equation.



Exit Ticket

Solve this equation graphically: $3 - 2x = |x - 5|$

e. Write the two functions represented by each side of the equation.

f. Graph the functions in an appropriate viewing window.

g. Determine the intersection points of the two functions.

h. Verify that the x -coordinates of the intersection points are solutions to the equation.

