

Solving Linear Equations Using a TI-83+

Before you begin, clear all previously saved functions and set the viewing window and turn off any stat plots

To Clear Previously Saved Functions

Y=

Highlight and Clear

To Set Graph Scale

Zoom

6:ZStandard

Zoom

5:ZSquare

$$\text{Solve: } 4(x - 3) - x = x - 6$$

Algebraically:

$$4(x - 3) - x = x - 6$$

$$4x - 12 - x = x - 6$$

$$3x - 12 = x - 6$$

$$2x = 6$$

$$x = 3$$

There are two ways to solve a linear equation graphically: Using Root and Using Intersection

Graphically: Using Zero (Root)

Rewrite the equation with 0 on one side.

$$4(x - 3) - x - x + 6 = 0$$

Let Y1 equal the left side of the equation.

Y=

$$Y1 = 4(x - 3) - x - x + 6$$

Then graph.

Graph

Find the x-intercept (zero)

2nd Calc

2:Zero

Left Bound?: Use the left or right arrow to move the cursor to the left of the intercept.

Enter

Right Bound?: Use the right arrow to move the cursor to the right of the intercept

Enter

Guess?: Move the cursor close to the x-intercept.

Enter

At the bottom of the screen, it shows the x and y coordinate of the x intercept. (3, 0)

x=3 is the solution to the equation.

Graphically: Using Intersection

Each side of the equation represents a linear expression. If both sides of the equation are graphed, their point of intersection has the same y value. Therefore, the x-coordinate of the point of intersection represents the solution to the equation.

Graph both linear expressions:

Y=

(Clear functions)

$$Y1 = 4(x - 3) - x$$

$$Y2 = x - 6$$

Graph

To find the point of intersection:

2nd Calc

5:Intersect

First Curve?

The first equation appears in the upper left corner

Enter

Second Curve?

The second equation appears in the upper left corner

Enter

Guess? Move cursor close to the point of intersection

Enter

At the bottom of the screen, it shows the x and y coordinate of the point of intersection. (3, -3)

x=3 is the solution to the equation.