TI 83-84: Solving Equations By Graphing On Your Calculator

Important: Solving by graphing on your calculator gives a decimal answer, not an "exact" answer. So if the answer is really $\sqrt{2}$, the calculator will tell you that the answer is 1.414...

Method 1: Graph each side of the equation as separate "y =" equation, look for the intersection of the graphs -- the x-coordinate of any intersection is a solution. (See Worksheet 5 for directions on finding intersections.) Make sure that you only list x-values as solutions…there were no y-values in the original equation.

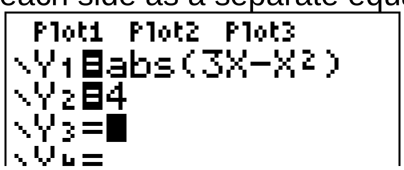
Method 2: Get a zero on one side of the equation, then graph the other side on your calculator. Look for the x-intercepts -- these will be the solutions. (See Worksheet 6 for directions on finding x-intercepts.) Make sure that you only list x-values as solutions…there were no y-values in the original equation.

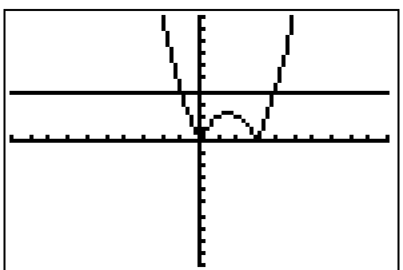
Here's an example using Method 1:

Solve this equation by graphing:

$$\left|3x - x^2\right| = 4$$

graph each side as a separate equation:





Find the two intersections by using 2nd CALC intersect: x = -1 and x = 4 are solutions to this equation.

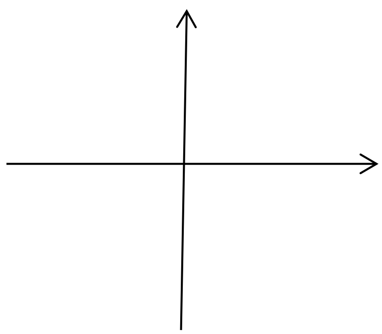
Can you check that by substituting those answers for x in the equation? Try it!

$\left|3x - x^2\right| = 4$	$\left|3x - x^2\right| = 4$
let $x = -1$	let $x = 4$
$\left|3(-1) - (-1)^2\right| \stackrel{?}{=} 4$ then what?	$\left|3(4) - (4)^2\right| \stackrel{?}{=} 4$

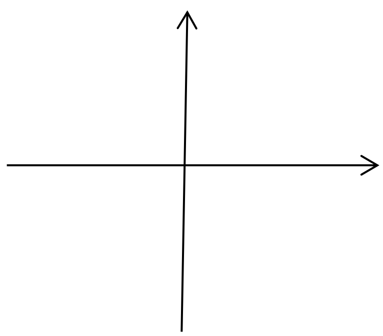
Practice for Solving Equations By Graphing

- Solve each equation by graphing both sides of the equation as separate functions on your calculator. ZOOM Standard works well.
- Sketch the graphs below, then ask your calculator for the exact intersections, using 2nd CALC intersect.
- Remember that we only want the x-values, because we're solving equations with just x!
- *Answers are at the bottom of the page.*

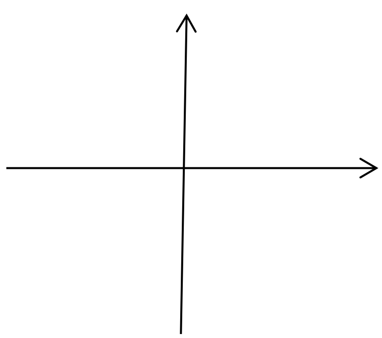
(1) $x^2 = x + 6$



(2) $|x + 2| = 3$



(3) $\sqrt{x+7} = 2$



(1) x = -2, 3 **(2)** x = -5, 1 **(3)** x = -3