Ordered Pairs and $y = mx + b$ on the Calculator

As we learn in chapter 3, given a linear equation $y = mx + b$, to find ordered pairs that satisfy the equation we choose a value for x (choose $x = 0$ if you specifically want the y-intercept), plug it into the equation, and evaluate the expression to find the y-value that goes with it.

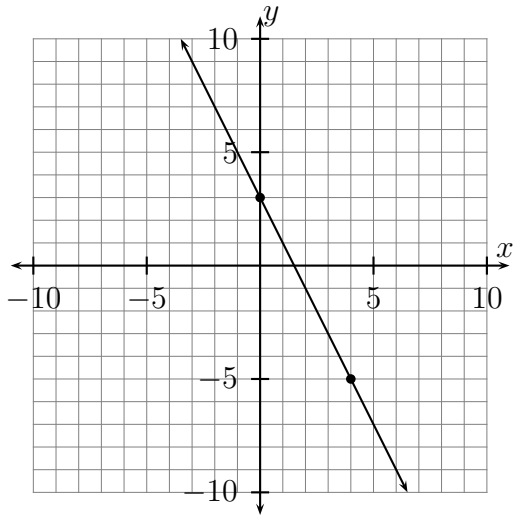
For example, suppose $y = -2x + 3$ is the equation we are working with. Then, choosing $x = 0$ we get:

$$\begin{aligned} & y = -2x + 3 \\ x = 0 \rightarrow \quad & y = -2(0) + 3 \\ & y = 3 \qquad \rightarrow \quad (x, y) = (0, 3) \end{aligned}$$

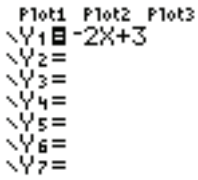
Or, if you choose $x = 4$,

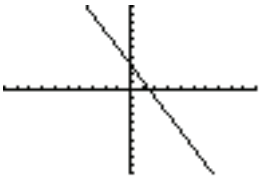
$$\begin{aligned} & y = -2x + 3 \\ x = 4 \rightarrow \quad & y = -2(4) + 3 \\ & y = -8 + 3 \\ & y = -5 \qquad \rightarrow \quad (x, y) = (4, -5) \end{aligned}$$

There are several ways to do this on the calculator so that you can check your work. One way is to find enough ordered pair solutions so that you can plot them on a graph:



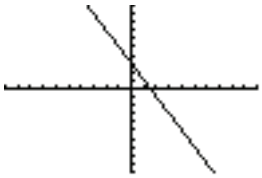
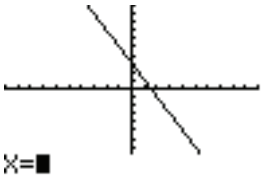
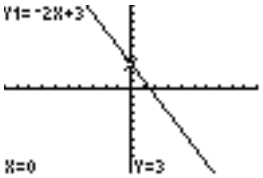
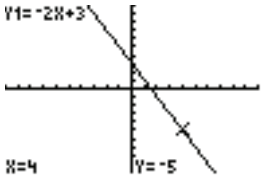
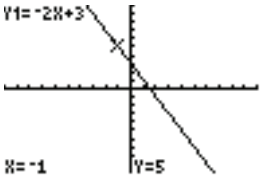
Then, on the calculator, plug the formula into $\boxed{Y=}$, then press $\boxed{\text{ZOOM}}$ $\boxed{6}$ to set the window to standard. The first screen shot should match after you have plugged in the formula, the second one after you zoom:





Comparing the two graphs, you can see that they are the same. The problem is, you are checking the whole problem. Let's look at two ways to check actual ordered pairs, using a graph, and using a table.

Using the same calculator graph from the previous page, to have the calculator check individual points, press [2ND] - [CALC] - [1]. This brings you to the graph, but with an "$X =$" on the bottom left. Type an x-value and press [ENTER] to have the calculator evaluate for you. In the following, I am checking $x = 0$, $x = 4$, and $x = -1$:

The original graph [2ND] - [CALC] - [1]	$x = 0$	$x = 4$	$x = -1$
				
Ordered Pairs:	$(0, 3)$	$(4, -5)$	$(-1, 5)$

Another great feature of the calculator is tables. To use the table feature you must have an equation in [$Y =$], then set the table, then use the table. We will assume that $y = -2x + 3$ is still in [$Y =$] from before.

To set your table, press [2ND] - [TBLSET]. Move the cursor with the calculator arrow keys until it is on "Ask" on the "Indpnt" line, then press [ENTER] until the word "Ask" stays dark. Don't worry about "TblStart" or "ΔTbl". We will learn about those in another handout! Your screen should look something like:

Next, press [2ND] - [TABLE]. You may or may not have ordered pairs already in your table. The screen shots below assume you didn't have anything, but it's okay if you did. Just type whatever number you want to plug in and press [ENTER] to have the calculator complete the ordered pair. If you put in $x = 0$, $x = 4$, and $x = -1$ as before, plus one extra as a bonus, $x = 2$, the table screens would look like:

Blank Table	$x = 0$	$x = 4$	$x = -1$	$x = 2$