TI-83 **Topic #6 – ZoomDecimal**

As you trace along the graph of a function, you may have noticed that the calculator doesn't usually choose very "nice" values of x (what kind of society are we living in?…). Instead, it usually chooses x-values such as x = 0.21276596 (yuck!!!). To get the calculator to use "nice" values, we can use ZoomDecimal.

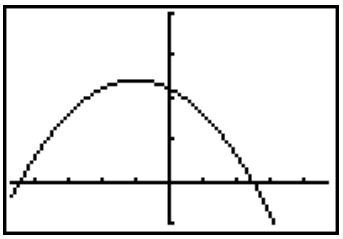
Task #1: Graph $y = -x^2 - 2x + 11$ using ZoomDecimal.

Strategy : Enter the function at the Y= menu (press **Y=** **(-)** **X,T,q,n** **x^2** **-** **2** **X,T,q,n** **+** **1** **1**). Press **ZOOM** and select **4: ZDecimal**. The calculator has now chosen "nice" values of x for us by setting Xmin to -4.7 and Xmax to 4.7. These x-values were found by dividing the total number of increments between pixels (94 increments) in two (to get 47 in either direction from zero), and using an increment of 0.1. The y-values must still be set by us to show the portion of the graph that we want. We could use TRACE to determine appropriate y-values, such as -5 to 20. Press WINDOW and <u>change only the y-values</u> to:

Ymin = -5
Ymax = 20
Yscl = 5

Press **GRAPH** to display the graph. Please note that if we were to change the x-values at this point or select ZoomBox, we would lose the "nice" x-values.

Conclusion: Your graph should look like this:



Press **TRACE** and use the right and left arrow keys to trace along the graph. Notice that the x-values are now "nice" values. To see a wider view of the graph and still maintain the "nice" x-values, we can make the graph twice as wide by doubling both Xmin and Xmax. Press **WINDOW** , move the cursor down to Xmin , press **2nd** **INS** **2** **´** and **ENTER** . Repeat the process for Xmax. Press **GRAPH** and **TRACE** to see that we still have "nice" x-values.

You try: Graph the function $y = x^3 - 2x + 40$ using a ZoomDecimal.

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