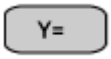
Graphing, Evaluating Functions, and Solving Systems of Linear Equations

To enter the function $f(x) = x^3 - 3x + 4$ into the calculator press



. On the line labeled **Y1**, type x^3 - 3x + 4

Notes:

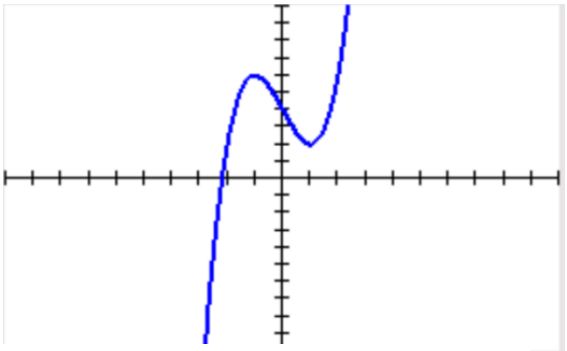
- Use the key 

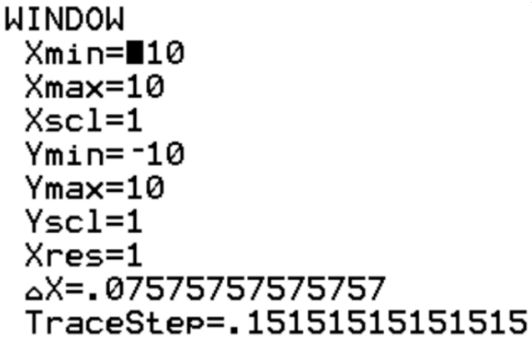
for the variable.
- The TI-83 and TI-84 handle exponents differently. In the newer 84, you will need to cursor out of the exponent before typing the next character.

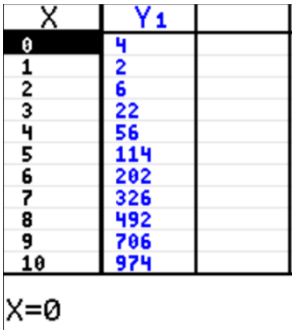
To graph the function, press 

To explore various zoom options, press 

- **2**: Zoom In (smaller range of x and y values, you choose center of zoom)
- **3**: Zoom Out (larger range of x and y values, you choose center of zoom)
- **5**: ZOOM Square (same scale for x and y so that circles look like circles and perpendicular lines look like right angles)
- **6**: Zoom Standard $[-10,10] \times [-10,10]$
- **7**: Zoom Trig $[-2\pi, 2\pi] \times [-4,4]$
- **9**: Zoom Stat (useful for graphing data in tables)
- **0**: Zoom Fit (adjusts y values so that they all graph, given the values of x)







Or select WINDOW to adjust values manually.

To display a table of function values: 2nd GRAPH to select the **TABLE** feature. You can scroll through values here.

To specify where the table starts and the increments for x-values: 2nd WINDOW, for **TBLSET.**

TblStart = **-5** (Use the (−) key not − for negative numbers.)

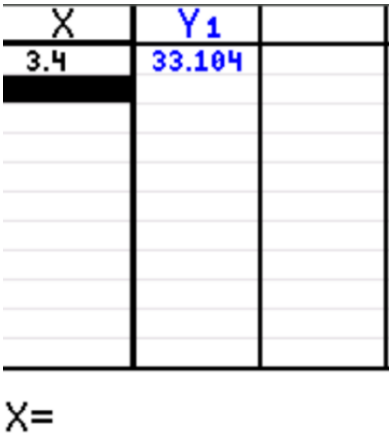
ΔTbl = **.5**

(This is how much the values will jump as you scroll through the table.)

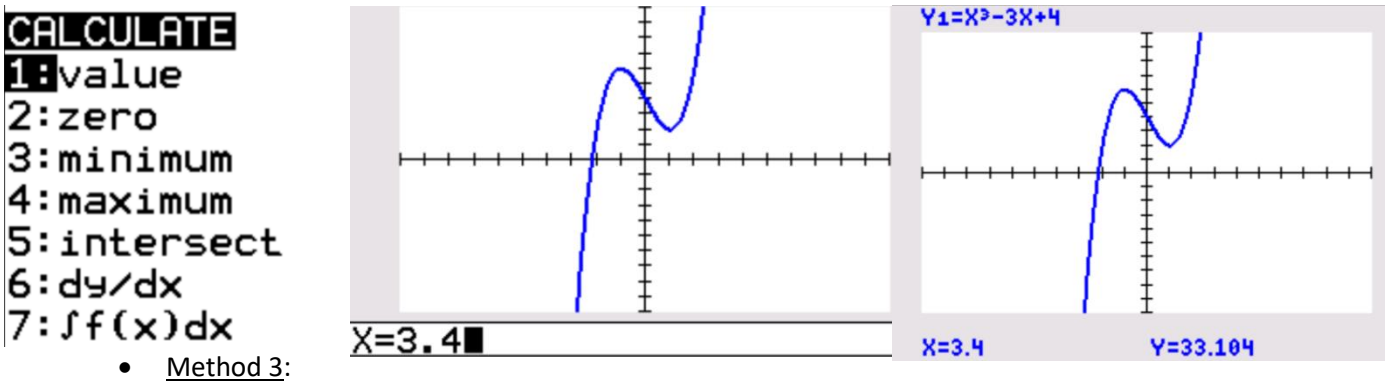
2nd GRAPH (for **TABLE**) to see the results.

To find a specific value for $f(x)$: There are several ways. For example evaluate $f(3.4)$.

- Method 1: Press 2nd WINDOW (for **TBLSET**). On this screen, change **INDPNT** from **AUTO** to **ASK** , press ENTER . Then select 2nd GRAPH (for **TABLE**). On the first line of the table, enter the value 3.4, then press ENTER . *The result is **33.104.***



- Method 2: Press 2nd TRACE (for **CALC**). On this screen, select **1**: Value, press ENTER , when prompted for the value of x (at X=) type 3.4, press ENTER . *The result is Y=**33.104.***

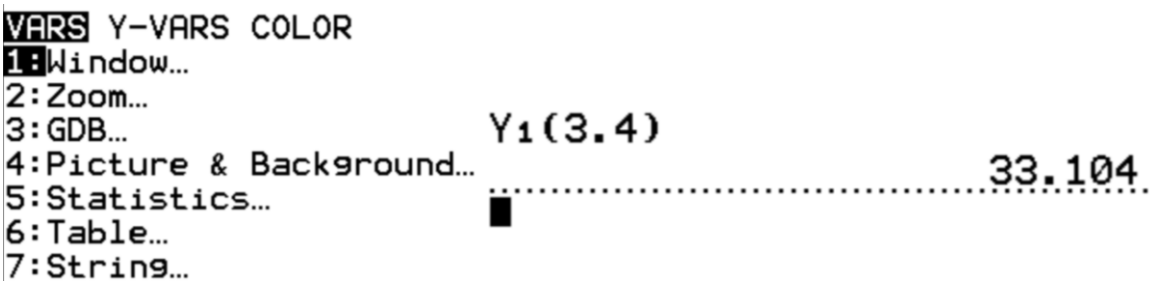


- Method 3:

Press VARS → **Y-VARS** ENTER, select **1**: Function, press ENTER, then **1**: Y1 ENTER.

Then on the main screen, after Y1, put in parentheses 3.4, then press ENTER.

*The result is **33.104***



To find the solution to a system of two linear equations graphically, do the following:

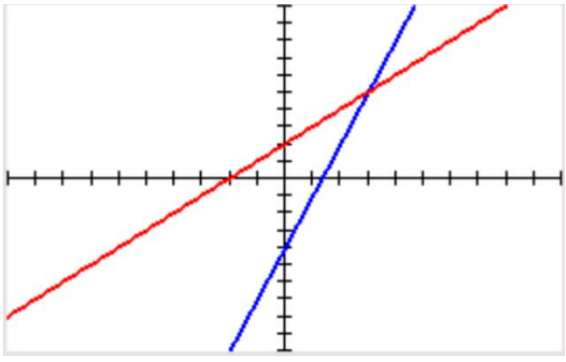
- Enter the equations of the lines:

Y= Y1 = 3x - 4

Y2 = x + 2

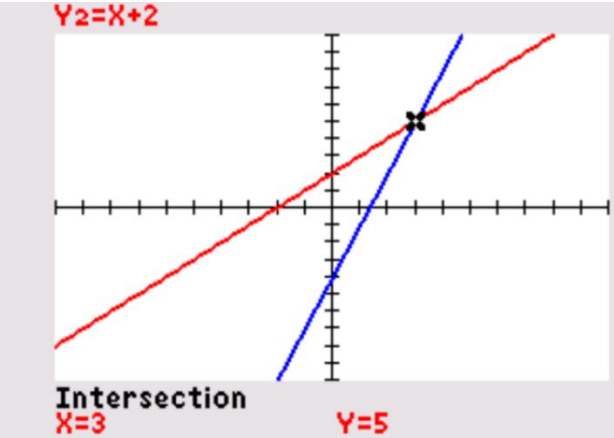
- Graph the lines:

GRAPH



- Find the intersection:

2nd TRACE (for **CALC**) **5**: intersect, press ENTER, ENTER, ENTER.



Note: (We press ENTER three times to accept all the defaults for linear equations. If you are graphing non-linear equations, or more than two equations, you may need to read the prompts and make choices before moving on.)

The result is: Intersection ***X=3*** ***Y=5***