Algebra 1 TI-84 Tips & Tricks

- On the TI-84 all the blue functions above keys can be accessed by first clicking the blue $\mathbf{2^{nd}}$ button and green functions above keys can be accessed by first clicking the green **alpha** button
- To make **Exponents** click the **^** (above the **÷** symbol). A shortcut for squaring is the **x^2** button above the **log** button on left side of calculator
- $\mathbf{2^{nd}}$ and **mode** to Quit and return to the HomeScreen. Sometimes the **clear** button below the scroll arrows will also work.
- To make an Absolute Value symbol click the green **alpha** button then **window** button. Press **enter**. You should see **| |**
- To make a fraction press **alpha** and the key next to it **x,T,$\boldsymbol{\theta}$,$\boldsymbol{n}$** or press **alpha** then **y=** then press **enter**. This is useful for **reducing fractions** (slopes must be reduced before putting into slope-intercept form y=mx+b)

- **Questions with One variable**
  Put the question in $\boldsymbol{y_1}$**=**
  Put each answer one by one in $\boldsymbol{y_2}$**=**
  Check the table $\mathbf{2^{nd}}$ **graph**
  If all the values in the $\boldsymbol{Y_1}$ and $\boldsymbol{Y_2}$ match, the answer is correct

  Example 1:

  4 The expression $-2(x^2 - 2x + 1) + (3x^2 + 3x - 5)$ is equivalent to

  (1) $x^2 + x - 4$ (3) $x^2 + 7x - 4$

  (2) $x^2 - x - 7$ (4) $x^2 + 7x - 7$

- **Finding intersection with graphing**
  Isolate the y by moving all the x's and numbers to other side of equal sign
  Put these equations into $\boldsymbol{y_1}$**=** and $\boldsymbol{y_2}$**=**
  Click $\mathbf{2^{nd}}$ **trace** then chose **5: intersect** and hit **enter**

Use the scrolling arrows to move close to the intersection on **First curve** then click **enter**
Now move close to the intersection on **Second Curve** and click **enter**
Now the calculator says **Guess?** Hit **enter**.
The calculator will say **Intersection** and displays the x and y values

Example 2:

$$y = x^2 - 3x - 6$$
$$y = x - 1$$

- **Finding intersection with table**
  Isolate the y by moving all the x's and numbers to other side of equal sign
  Put these equations into $\boldsymbol{y_1}$**=** and $\boldsymbol{y_2}$**=**
  Check the table $\boldsymbol{2^{nd}}$ **graph**
  For whatever value of x, both the $\boldsymbol{Y_1}$ and $\boldsymbol{Y_2}$ match, that will be the answer
  Try it with Example 3 above. When x=-1, the $\boldsymbol{Y_1}$ and $\boldsymbol{Y_2}$ are both -2 so the point (-1,-2) is one intersection. When x=5, the $\boldsymbol{Y_1}$ and $\boldsymbol{Y_2}$ are both 4 so (5,4) is another intersection.

  Note*: If two equations have the same number in front of the x (slope) and different y-intersects, they will be parallel so there will be* ***no solution*** *because parallel lines never intersect.*

- **Changing Windows in Graphing**
  Sometimes you will be given a question that involves graph that is outside the domain and range on the default graph (x and y both go from -10 to 10.)
  Click on **window**
  Xmin enter smallest x value
  Xmax enter largest x value
  Ymin enter smallest y value
  Ymax enter largest y value
  Then **Graph**

Example 3: Graph the following

An Air Force pilot is flying at a cruising altitude of 9000 feet and is forced to eject from her aircraft. The function $h(t) = -16t^2 + 128t + 9000$ models the height, in feet, of the pilot above the ground, where t is the time, in seconds, after she is ejected from the aircraft.

Note: *to reset the graph back to the default click* **zoom, 6, enter**

- **Finding Solutions, Roots, Zeroes, and X-Intercepts**

Solutions, roots, zeroes, and x-intercepts all mean the same thing: they want you to find where a function crosses the x-axis (where y is zero hence why it is called "zeroes".)
Isolate the y by moving all the x's and numbers to other side of equal sign

Method 1
Put the equation into $\boldsymbol{y_1}$**=**
Click $\boldsymbol{2^{nd}}$ **trace** then chose **2: zero** and hit **enter**
Move the cursor to the **left** (above) of the place where it crosses the x-axis **Left Bound** and hit **enter.** Move cursor to the **right** (below), hit **enter**. Calculator asks **Guess?** Hit **enter.** Below the graph, the display will show the x and y coordinates. ***The Y should be 0.***

Method 2
App PlySmly2
Select 1: POLYNOMIAL ROOT FINDER enter
ORDER (scroll to the number representing highest exponent, hit enter). For example, if highest exponent is 2, scroll to 2, enter
Graph button (corresponds to NEXT)
Enter each Coefficient, enter, scroll to the next space
Enter all the coefficients and constant
Graph button (corresponds to SOLVE)
The answer appears

Example 4:
Find the roots of the function y=$3x^2 + 16x - 35$

- **Finding Minimums and Maximums**
  Put the equation into y_1=
  Click 2^{nd} **trace** then choose either **3: minimum** (for lowest point) or **4: maximum** (for highest point) then hit **enter**
  The graph appears, move the cursor **Left Bound**, **enter**, **Right Bound**, **enter.** Calculator asks **Guess?** Hit **enter.** Below the graph, the display will show the x and y coordinates.

  Example 5:

  What is the *minimum* value of the function $y = |x + 3| - 2$?
  1) –2
  2) 2
  3) 3
  4) –3

- **Solving systems of equations using App PlySmly2**
  Choose option 2 Simultaneous Eqn Solver
  If you have 2 equations and 2 unknowns, just click the button under Next in the far-right corner of screen (graph button).
  If you are solving 3 equations and 3 unknowns, change Equations and Unknowns to 3 then click Next (graph button)

  Make sure your equations are in order (alphabetical order x then y then z followed by = sign and a number). You will now enter all the coefficients and constant in order from left to right hitting enter each time. For the coefficients, you will need to enter and scroll to the next space to enter.

  Once all are filled in, click Solve (graph button). You should see the results of the variables.

  Example 6:

  $2x + 3y = -5$
  $-4x - 9y = 7$

- **Graphing Inequalities**
  Isolate the y by moving x's and numbers to the right side of the inequality symbol
  Click **apps** button. Scroll down and select **Inequalz** then **enter**
  Click **y=**. Scroll to the left until the box blinks. Hit **enter**.
  Scroll to **Y** use your cursor to find the inequality symbol that matches the equation. Scroll to **OK** and hit **enter**
  Scroll right and enter the equation
  Scroll down and do the same if there is a second equation
  Select **graph**

  Example 7:

  $$3y + 2x \leq 15$$
  $$y - x > 1$$

  Note: *To exit the Inequality app, go back to* ***apps,*** *click* ***Inequalz, 2: Quit Inequality Graphing, enter.***

- **Statistics**
  Click on **stat** then **1: Edit** and **enter**
  You will enter each value under **L1** column and hit enter after each value
  Click on **stat** then Scroll to **Calc** and select **1: 1-Var Stats**
  List should have L1 next to it
  FreqList should have nothing next to it
  Scroll to **Calculate** and hit **enter**
  $\bar{x}$ is the mean (average)
  S_x is Sample standard deviation
  σ_x is Population standard deviation
  n= is the number of data points. (Make sure that matches how many were in the question.)
  minx= is the smallest value
  Q_1 is the lower quartile
  $\mathbf{Med}$ is the median
  Q_3 is the upper quartile
  $\mathbf{maxX}$ is the highest value

Example 8:

The following table shows the heights, in inches, of the players on the opening-night roster of the 2015-2016 New York Knicks.

84	80	87	75	77	79	80	74	76	80	80	82	82

The population standard deviation of these data is approximately

1) 3.5
2) 13
3) 79.7
4) 80

Note: *To clear the values in the L1 column, scroll up so your cursor is on* ***L1****, hit* ***clear****, scroll down. That should clear all the data points.*

- **Correlation Coefficients**
  ***The correlation coefficient will not appear unless you turn Stat Diagnostics On
  Click **mode**
  Scroll down to **Stat Diagnostics**
  Scroll to **On** then hit **enter**
  Then **Clear**

  To enter data from a question, go to **stat**, **1: Edit**, **enter**
  Enter all the x values under the **L1** column and the y values under **L2**
  (If you are unsure, time is always an x value.)
  Click on **stat**, scroll to **Calc**. Under **Calc**, scroll down to **4: LinReg (ax+b)**, hit **enter.** You should see **Xlist: L1, YList: L2**, and nothing next to the rest. Scroll down click **Calculate** and **enter**
  The Correlation Coefficient is the **r** value (ignore $\mathbf{r^2}$)

Example 9:

The table below shows the amount of money a popular movie earned, in millions of dollars, during its first six weeks in theaters.

Week (x)	1	2	3	4	5	6
Dollars Earned, in Millions (y)	185	150	90	50	25	5

Write the linear regression equation for this data set, rounding all values to the *nearest hundredth*.

State the correlation coefficient to the *nearest hundredth*.

Other useful APPS
Periodic – shows you the Periodic Table
SciTools-Sig-Fig Calculator and Unit Converter

Just for fun. To find out the day of the week you were born
2^{nd} 0
Scroll down to dayOfWk(
Enter
Put in the four-digit year, two-digit month, two-digit day
Enter
The numbers correspond to:
1 Sunday
2 Monday
3 Tuesday
4 Wednesday
5 Thursday
6 Friday
7 Saturday