

TI-83 GRAPHING CALCULATOR TIPS AND HOW-TO'S

courtesy Kevin Kelly, LHS mathematics

Tips

General operations

- Type operations in the same order as you would write them, e.g.: [2nd][$\sqrt{\quad}$][5] for $\sqrt{5}$, [log][2][)] for $\log(2)$. Hit [ENTER] to evaluate.
- The [MODE] screen contains several important options. Each row offers 2 to 4 choices; generally, you should keep each row on the leftmost choice unless you know you want something else.
- Before using trig functions, use the [MODE] screen to select degree or radian measure.

Exponents and scientific notation

- The power key looks like [\wedge], e.g.: [3][\wedge][5] for 3^5 .
- There are shortcut keys for 10^\wedge and e^\wedge ($e \approx 2.718$).
- Scientific notation is entered using [2nd][EE] but appears on the screen as E, e.g.: [4][2nd][EE][7] appears as 4E7 and means $4 \cdot 10^7$.
- Occasionally the calculator will surprise you with a number like 4E-13. This means $4 \cdot 10^{-13}$, which is extremely close to 0. In many situations this may be a rounding error, and the value should just be interpreted as 0.

Reusing answers and storing values

- You can use the calculator's last answer in the next entry by typing [2nd][Ans], e.g.: [2nd][$\sqrt{\quad}$][2nd][Ans] for the square root of the previous answer.
- The calculator has memories named A through Z. You can store the value 6 in memory A by typing [6][STO→][ALPHA][A]. To use the value later, just type [ALPHA][A] in any formula, e.g., [ALPHA][A][x²] for A^2 which evaluates to 36.

Graphs

- When entering functions on the [Y=] screen, the [X,T,θ,n] key is the easiest way to type an X.
- When you have entered more than one function on the [Y=] screen, you can turn each graph on or off. Move the cursor over any = sign and hit [ENTER] to toggle the status. A black box around the = sign means that a function is currently on.

Changing the display window

- Get to know the many choices on the [ZOOM] menu. ZStandard sets the ranges to $-10 \dots 10$, often a good first view of a new function. ZSquare puts the same unit length on both axes, so that graphs appear in the correct proportion.
- When you choose Zoom In or Zoom Out, you must then use the arrows to move the graph cursor to the place where you want to zoom, then [ENTER] again.

How-to's

Finding a single function value

Warning: Both of these methods fail if the relevant point is currently off the graphing screen. If necessary, zoom out first.

- [2nd][Calc] 1: value, type an x -value, and [Enter].
- *Alternate method:* While in the [TRACE] mode, type an x -value, and [Enter].

Displaying a table of function values

- Hit [2nd][TABLE] to see a table of values. Change what x -values are displayed using [2nd][TBLSET].

Finding zeroes (roots)

Note: Many functions have more than one zero. You have to visually determine where the zeros are, and tell the calculator where to look for each zero.

- [2nd][Calc] 2: zero. You will then be asked for a lower bound, an upper bound, and an approximate guess of the zero. These can be entered either graphically using [◀] and [▶], or numerically.
- *Slower and less precise alternative:* In [TRACE] mode, move to the approximate location of an x -intercept. [ZOOM] for greater accuracy as necessary.

Finding maximum and minimum points in an interval

- [2nd][Calc] 3: minimum or [2nd][Calc] 4: maximum. You will then be asked for a lower bound, an upper bound, and an approximate guess of the minimum or maximum point. These can be entered either graphically using [◀] and [▶], or numerically.
- *Slower and less precise alternative:* In [TRACE] mode, move to the approximate location of a maximum or minimum. [ZOOM] for greater accuracy as necessary.

Finding intersections between graphs

- [2nd][Calc] 5 intersect. You will have to successively select the two functions whose intersection you want to find, then set left and right bounds for the search.
- Slower and less precise alternative: [TRACE].