

Getting Started with your TI-83(+)

- a) **Converting decimals to fractions.** Use **MATH**, 1: **Frac**.

Example. To convert 0.5 to a fraction, you need the following keystrokes: 0.5 **ENTER**, **MATH**, **ENTER** (this will chose fraction option), **ENTER**.

- b) **Roots.** Use **MATH**, 5: $\sqrt[x]{\quad}$.

Example. To evaluate $\sqrt[5]{32}$ you need the following keystrokes: 5, **MATH** (chose option 5), **ENTER**, 32, **ENTER**.

Alternatively (faster) you can evaluate $\sqrt[5]{32}$ as $32^{1/5}$. Type: $32 \wedge (1/5)$.

- c) **Absolute value.** Use **MATH**, **NUM** menu, option 1: **abs**.

Example. To evaluate $|2^3 - 3^2|$, you need the following keystrokes: **MATH**, \rightarrow , **ENTER**, $2 \wedge 3 - 3 \wedge 2$, **)**.

- d) **Graphing.** Enter the function you need to graph in Y_1 under $Y =$. Use key **X,T, θ ,n** to display x . Then use **GRAPH**.

Change the graphing screen using **WINDOW**.

Example. Graph $y = x + 2$. Click on $Y =$, then use X, T, θ, n , key to display x and then type $+2$. Finally choose **GRAPH**.

Now, let us graph $y = x + 100$. To see the function, you will have to change the graphing screen. Go to **WINDOW** and modify X_{\min} , Y_{\min} and X_{\max} and Y_{\max} .

ZOOM button and option 6 (**6:ZStandard**) will change your window to standard viewing window ($-10 \leq x \leq 10$ and $-10 \leq y \leq 10$).

- e) **Evaluating.** We can evaluate an expression that depends on x for a particular value of x on two ways.

1. By using **CALC**. First enter your function using **Y=** key. Press **2nd CALC** and choose **1:value**. Then enter the value of x for which you want to evaluate the function.

NOTE: You might need to adjust the windows.

Example. Evaluate $x^3 - x - 2$ for $x = -1, 1$ and 2 .

2. By using Y variable. Example. Let us evaluate $x^3 - x - 2$ for $x = -1, 1$ and 2 again. First we enter $x^3 - x - 2$ as Y_1 in $Y =$ menu. Then type: **VARS**, \rightarrow (chose **Y-vars**), **ENTER** (chose function), **ENTER** (you will get Y_1). Then type (-1) . Similarly, we will get $Y_1(1)$ and $Y_1(2)$.

f) **Scientific Notation.** Change your calculator to scientific notation (**MODE, Sci**).

Example. Evaluate $5^7 + 4^5$. **NOTE:** The calculator answer $7.9149e4$ means $7.9149 \cdot 10^4$.

g) **Solving Equations.** Enter the left and the right side of the equation as Y_1 and Y_2 (use $Y =$ button). Graph both functions on the same window. Change the window to get a better plot or use **ZOOM, ZoomFit** option. Then use **CALC (2nd, TRACE) 5:intersect** to find the intersection of Y_1 and Y_2 . The x -coordinate of the intersection point is the solution of the equation.

If there is more than one point of intersection, use the **TRACE** key to move your cursor over to the other points of intersection.

Practice Problems.

1. Convert $-.485$ to a fraction.
2. Evaluate $\sqrt[7]{16384}$ and $\sqrt[3]{72}$.
3. Evaluate $\frac{|5-3^2|}{2^3-6}$.
4. Graph the function $y = x^2 - 3x$.
5. Evaluate the function $y = x^2 - 3x$ at values $x = 1, x = 3$ and $x = 20$.
6. Graph the function $y = \sqrt[3]{x} + |x - 2|$.
7. Evaluate the function $y = \sqrt[3]{x} + |x - 2|$ at values $x = -1, x = 0$ and $x = 16$.
8. Scientific notation problems are on a separate handout.
9. Solve $x^2 - 2 = x$.
10. Solve $5x^2 - 3 = -x^2 + x - 2$ graphically. Convert the answers to fractions. (use **MATH** button)
11. Solve $\sqrt{1 - 4x} + \sqrt{2x + 3} = 3$ graphically.
12. Solve $|\frac{5x-3}{2}| + 2 = 6$ graphically. Convert the answers to fractions.