Graphing Calculator Workshop Part #1
Basic Operations and Graphing on the TI-83 or TI-84 Graphing Calculator

Notes: Press the ENTER key for answers (ENTER means = sign)
To get back to the main screen, press 2nd , then Mode (the Quit function)

Exercises:
Turn the calculator ON
CLEAR the screen

$-9+5 =$ _____   (Use the minus sign key for <u>leading</u> minus signs)

$20-8 =$ _____   (Use the subtraction key <u>between</u> numbers)

$\dfrac{5}{40} =$ _____   To write as a simplified fraction: MATH / ENTER / ENTER _____

$\dfrac{7+8}{4+1} =$ _____   When + or – signs are in fractions ENCLOSE NUMERATOR AND

DENOMINATOR INSIDE PARENTHESIS!!!!

Exponents: There are 3 different ways to enter exponents with the calculator:

$(-5)^2 =$ _25____   Use squaring key "x^2" to square a number
$-5^2 = -25$

$4^3 =$ _____   Use MATH key and option #3 to cube a number

$2^5 =$ _____   Use the "∧" key for entering exponents higher than 2 or 3
                          (with old style calculator, enter fractional exponents *in parenthesis*!!!)

Radicals: There are 3 different ways to enter radicals with the calculator:
$\sqrt{81} =$ _____   Square root is above the x^2 key, so we must press "2nd x^2"

$\sqrt[3]{27} =$ _____   Use the MATH button and option #4 to find a cube root
or $27^{\wedge(1/3)}$

$\sqrt[4]{81} =$ _____   To enter a higher exponent, you must <u>first enter the index</u>,
or $81^{\wedge(1/4)}$ then press MATH, option #5, and finally enter the radicand

<u>Check for Complex Mode (and change if needed)</u>
$\sqrt{-100} =$ _____ Press MODE, scroll down to "Real", scroll right to cover "a+bi", press ENTER, 2nd Quit

Special Symbols

$(8i)(2i) =$ _____ i is above the decimal point (use 2nd key)

Give the approximate value of π (above ^)   (to 3 decimal places):   _____

Give the approximate value of e (above ÷)   (to 3 decimal places):   _____

$|4 - 20| =$ _____ 2nd Catalog gives list with <u>absolute value</u> at the top

Graphing lines:

Enter the equation $3x + 6y = 5$ (isolate y and enter into "$y =$ " then press GRAPH)

➢ Find the point on the line where $x = 3$ _____   (2nd TRACE; #1; 3; Enter)

Graphing Higher Level Functions:

Enter the equation $f(x) = -x^2 - x + 6$ (into "$y =$") and find:

➢ x intercepts: _____   (2nd TRACE; 2:Zero ; left bound; right bound ; guess)

➢ y intercept: _____   (2nd TRACE; 1:Value; $x = 0$)

➢ local maximum: _____   (2nd TRACE; 4:Maximum; left bound; right bound ; guess)

Correctly enter the function $f(x) = \dfrac{1}{x + 2}$ and find:

➢ $f(0) =$ _____   (2nd TRACE; 1:Value; $x = 0$)

➢ $f(-2) =$ _____   ($x = -2$) what happens to y?

We can use the "Intersection" function to find the solution to an equation

$x^2 - 5x + 3 = 2x - 7$

1) set $y_1 =$ left side and $y_2 =$ right side
2) 2nd TRACE; #5: Intersect
3) Enter (our first "curve" (or equation) is in y_1)
4) Enter (our second "curve" (or equation) is in y_2)
5) Use the Left and Right arrows to get the curser close to the intersection we are looking at
6) Record your answer for the first solution $x =$ _____
7) Repeat steps 2 through 6 and record your answer for the second solution $x =$ _____

You can store the answer to your problem to use as a simplified way to check your answer:
➢ Enter solution #1 into the main screen of the calculator
➢ Press the STO➔ button
➢ Press the X,T,Θ,n button
➢ Press ENTER
➢ Enter the left side of the equation; Press ENTER; Enter the right side of the equation; Press ENTER
➢ The 2 numbers should be identical (or very close to it, depending on rounding error)

This technique can be used for LOTS of equations to check your work (especially useful on tests!).