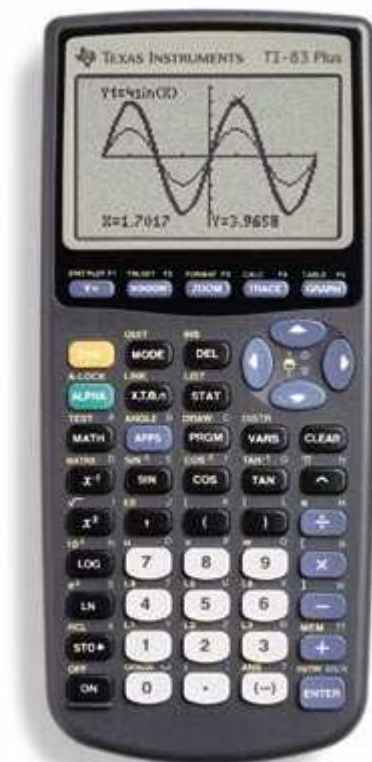


USING YOUR TI-83/84 GRAPHING CALCULATOR



Part I: Starting Out

Calculator Basics

- Product number and ID: **2nd****+** [MEM]
- Turning off the calculator: **2nd****ON** [OFF] (calculator has Automatic Power Down that shuts off calculator after 5 min. of inactivity)
- Adjusting the contrast: **2nd****▼** to lighten or **2nd****▲** to darken
(40 settings: See **0** through **9** in upper right corner)

The Keypad

- Numbers, basic operations, primary function
- Secondary functions: **2nd** key -- Use for anything in **yellow** lettering (**blue** on TI-84)
- Alpha function: displays alphabet characters **ALPHA** green lettering
 - **2nd****ALPHA** [A-LOCK] to lock in the alpha keys

Homescreen Basics

When you first turn on your calculator you will see your *home screen*. This is the screen you use to perform most arithmetic operations.

- 8 lines w/ max of 16 characters per line; text scrolls from one line to next
- **CLEAR**: hit once to clear the line; hit twice to clear the entire homescreen
- **ENTER** to complete expression (=)
- **DEL**: Deletes a character at the cursor; this key repeats
- **2nd****DEL** (INS): Inserts characters in front of the underline cursor; to turn off press **2nd****DEL** again or hit an arrow key
- **STO►** To store value to a variable
- **2nd****(←)** (ANS): Recall the last answer and use within an expression
 - Use the previous answer as the first entry in the next expression without typing **2nd****(←)** (ANS) by simply typing an operation symbol (or **STO►**)
- **2nd****ENTER** (ENTRY): You can access previous entries (up to 128 bytes stored in memory)
 - To scroll up through entries, press **2nd****ENTER** [ENTRY] repeatedly
- To enter multiple entries on single line -- Use **ALPHA****.** [:] to separate expressions

Checking the default settings

Hit the **MODE** key.

Make sure your screen looks like this:

```
Normal Sci Eng
Float 0123456789
Radian Degree
Func Par Pol Seq
Connected Dot
Sequential Simul
Real a+bi re^θi
Full Horiz G-T
```

If not, use your **▲** or **▼** arrow to highlight the changes and hit enter.

When entering an arithmetic expression into the calculator, always think about the **order** in which you want the operations to be completed.

You may need to use *parentheses* **()** to maintain the correct **Order of Operations**.

Multiplication can be indicated in three ways:

- **⊗** It shows up on the screen as an asterisk *
- parentheses ()
- implied multiplication when using variables (2A) or defined constants (5π)

Exponents

- Enter an exponent using the **^** key.
Ex: 3^4 would be entered as **3****^****4**
- If you are *squaring*, you can also use the **x²** key.
Ex: 5^2 would be entered as **5****x²**

Radical signs (roots)

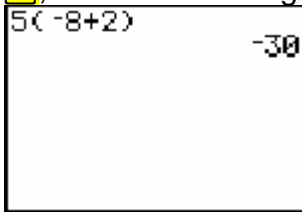
- If you want the *square root*, hit **2nd****x²** **[√]**
- If you want the *cube root*, go to the **MATH** menu and select **4**: **$\sqrt[3]{(}$**
- For *all other roots*, enter the root index first on the homescreen and then go to the **MATH** menu and select **5**: **\sqrt{x}**

```
MODE NUM CPX PRB
0: Frac
1: Dec
2: 1/x
3: 1/x2
4:  $\sqrt[3]{(}$ 
5:  $\sqrt{x}$ 
6: fMin(
7: fMax(
```

Let's try some examples.

1. Find the value of $5(-8 + 2)$.

Using the calculator buttons, type in the example exactly as you see it and press **ENTER** when you are done. (Make sure you use the negative sign in the bottom row **(-)**, not the minus sign **=**). You should see this screen.



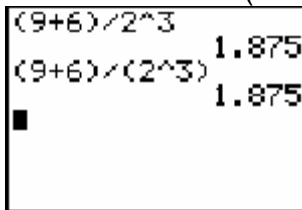
The answer will appear on the right side of the screen

2. Evaluate $\frac{9+6}{2^3}$

You want the calculator to add $9 + 6$ first then divide by 2^3 .

To enter this on your calculator you must use parentheses around the expression in the numerator.

You would enter: $(9+6)/2^3$ or $(9+6)/(2^3)$ Press **ENTER**.



Suppose you want this answer in fraction form. Press **MATH**. Choice # 1 is Convert to Fraction.

NUM CPX PRB
1: Frac
2: Dec
3:
4: $\sqrt{}$
5: \sqrt{x}
6: fMin(
7: fMax(
8: $\frac{\square}{\square}$

When choice 1 is highlighted, hit **ENTER**. Your screen should look like this:

```
(9+6)/2^3      1.875
(9+6)/(2^3)    1.875
Ans▶Frac
```

Hit **ENTER** again and your answer will appear in fraction form.

```
(9+6)/2^3      1.875
(9+6)/(2^3)    1.875
Ans▶Frac      15/8
█
```

The Absolute Value Function

To use the absolute value function, press **MATH** and scroll right to **NUM**.

```
MATH NUM CPX PRB
1:abs(
2:round(
3:iPart(
4:fPart(
5:int(
6:min(
7↓max(
```

The first choice is absolute value.

For example, to calculate $|4-13|$, you would enter

MATH: NUM 1: abs(

Then enter the expression 4 - 13, close the parentheses and hit **ENTER**.


```
abs(4-13)      9
█
```

CATALOG: Press **2nd[0]** [CATALOG] to access an alphabetical list of all functions and instructions

Error Messages (e.g. SYNTAX, DIVIDE BY 0)

- When the calculator encounters an error it will often give you two options:
 - 1: Quit
 - 2: GOTO

Choose **GOTO** when given the option. It will take you to the spot in your entry where the error occurred. You can then edit your entry as necessary.



```
ERR: SYNTAX  
1: Quit  
2: Goto
```