My TI-83 will not draw graphs properly!
Setting the MODE and WINDOW FORMAT screens

Sometime your TI-83 will not draw graphs as you think it should this is very often because of the MODE settings, the STAT PLOTS being switched on or the WINDOW FORMAT, if your calculator does not draw graphs correctly these instructions may help.

1. Press the **2nd** and **STAT PLOT** buttons.
The display will look like this.
Choose 4:PlotsOff and **ENTER**.
Now **ENTER** again.
The operation is DONE.

2. Press the **MODE** button.
The display should look exactly like this. If it does not look like this then using the cursor keys highlight the correct choice and press enter to change.
There can only be one item in each line highlighted.

3. Now press the **ZOOM** and **6**.
This sets the window range to the values shown.

4. Press the **2nd** and **FORMAT**.
This takes you to the WINDOW FORMAT screen.
It should look like this. If it does not then using the cursor keys highlight the correct item in each line and press **ENTER**.
Once the screen looks like this press **CLEAR**.
TI-83 Calculator Hint Sheet

How do I draw the graph of a function on my TI-83?

Using the \( Y= \) and \( \text{GRAPH} \) buttons.

1. To draw a graph we must first enter the function to be graphed.
   Press \( Y= \) you are now on the \( Y= \) screen.
   On this screen you can enter up to 10 functions that you may wish to graph.
   Enter the function you wish to graph, note that the letter \( x \) is entered using the key \( X,T, \).

2. Once you have entered a function on a line you must press \( \text{ENTER} \) to show that the function is complete.
   You may now enter a second function.

Notice that once a function has been entered the \( = \) sign is highlighted in black.
This shows that this function is selected to be drawn when you press \( \text{GRAPH} \).
If you unhighlight the \( = \) sign using the cursor keys and \( \text{ENTER} \) then the function is deselected and will not be drawn when you press \( \text{GRAPH} \).

3. To draw the graph of a function entered press \( \text{GRAPH} \).
   This will draw the graph of all the functions entered and selected on the \( Y= \) screen.
   Notice that only one function has been drawn since \( Y1= \) has been deselected.

4. You can now draw both graphs using a thicker line for the second function.
   To do this place the cursor over the \( \backslash \) mark to the left of the function and press \( \text{ENTER} \) until the thin line is shown thicker.
   You can also choose other line types, press \( \text{ENTER} \) to see the other options until you return to the thin line.
   To draw the graph of a function entered press \( \text{GRAPH} \).
   This will draw the graph of all the functions entered and selected on the \( Y= \) screen in chosen line type.
How do I get a table of values on my TI-83?

Using the 2nd TABLE and 2nd TblSet buttons.

1. You can view the function in the form of a table of results in as well as a graph.
   
   To do this you enter the function on the Y= screen as before but instead of pressing GRAPH press 2nd TABLE.
   
   You can scroll up and down on the table using the cursor keys.

2. We can view function Y1 by returning to the Y= screen and selecting the function.

3. We can alter the format of the table by pressing 2nd TblSet.
   
   This takes you to the TABLE SETUP Screen.

   Here you can enter the minimum X value on the table and the step size of the X values.
How do I run a program on my TI-83?

Using the [PRGM] button.

1. To run or execute a program on the TI-83 you must first choose which program you wish to run, to do the press the [PRGM] button. A screen like this is now displayed.

2. Using the cursor keys highlight the program you want to run. Once it is highlighted press [ENTER]. A screen like this is now displayed.

3. You must now confirm that the chosen program is the correct one by pressing [ENTER]. The program will now run.
How do I define a function in terms of one already defined?
\[ f(x) = g(x) + h(x) \]

Using the \[ \text{VARS} \] button.

1. Press \[ \text{Y}= \] and enter a function as \( Y_1 \), on the next line enter another function as \( Y_2 \).
   Try the example shown here.

2. We are now going to define \( Y_3 \) as \( Y_1(X) + Y_2(X) \).
   Using the cursor keys move to line \( Y_3= \).

3. Now press \[ \text{VARS} \].
   This menu is now shown, on it is listed all the different type of \[ \text{VAR} \]iables used by the calculator.

4. We want to use \[ \text{Y-VAR} \]iables so using the cursor key highlight this at the top of the menu.
   The menu changes to the one shown.

5. We want to use \[ \text{Function} \] variables, so highlight this and \[ \text{ENTER} \].
   Another menu is now displayed.
   On this menu we want to highlight \( Y_1 \) and \[ \text{ENTER} \].

6. When \[ \text{ENTER} \] is pressed you are returned to the \( Y= \) screen and you will notice that the variable name \( Y_1 \) has been “called up” to the position where the cursor was.

7. The + and the(X) are entered directly from the keypad.
   Repeat steps 3, 4 and 5 but choose \( Y_2 \).
   \( Y_3 \) has now been defined as \( Y_1(X) + Y_2(X) \).
How do I get Min / Max values from the TI-83?

Using the \( \text{2nd} \ \text{CALC} \) button.

1. Once a graph has been displayed on the screen you can use the \( \text{2nd} \ \text{CALC} \) menu to obtain the coordinates of important points on the graph.
   In this example the function used is \( Y = 3\sin(x) \).

2. Press \( \text{2nd} \ \text{CALC} \) and the following menu is displayed.
   Highlight minimum or maximum and \( \text{ENTER} \).

3. The screen shown is displayed.
   The function expression is given at the top left of the screen.
   There is a flashing cursor on the screen and the coordinates of the cursor are given at the bottom of the screen.
   The TI-83 is prompting you to move the cursor to any point left of the maximum you wish to find, “Left Bound?”
   Do this using the cursor keys and \( \text{ENTER} \).

4. The TI-83 now prompts you to move the cursor to any point right of the maximum you wish to find, “Right Bound?”
   Do this using the cursor keys and \( \text{ENTER} \).

5. The TI-83 now prompts you to move the cursor to your best estimate of the maximum, “Guess?”
   Do this using the cursor keys and \( \text{ENTER} \).

6. The TI-83 now returns its best numerical solution for the Maximum turning point requested.
   It is important to note that sometimes the value will not be exact.
How do I get a rational (exact value) answer instead of a decimal?

Using the \texttt{MATH} \texttt{Frac} facility.

1. When the TI-83 returns the answer to a given problem it will be in an Decimal (or Approximate) form. Often it would be preferred to have this answer in the form of a vulgar fraction. This is done using the \texttt{MATH} \texttt{Frac} facility.

2. In this example an arithmetic calculation has been carried out and a decimal answer has been returned.

To force the TI-83 to try to give this answer as a vulgar fraction, press \texttt{MATH} and choose 1: \texttt{Frac}.

Notice that the TI automatically places \texttt{Ans} on the screen. Now press \texttt{ENTER}. The answer appears as a vulgar fraction.

2. This facility can also be used to give the exact value (if one exists) for answer obtained from the \texttt{2nd CALC} menu.

In this example the TI has been calculating the area under a curve (integrating) and has obtained a decimal answer fraction.

Press \texttt{MATH} and choose 1: \texttt{Frac}.

Notice that the TI automatically places \texttt{Ans} on the screen. Now press \texttt{ENTER}. The answer appears as a vulgar fraction.

These values are often more useful than decimal.

Note: Not all decimal answer can be converted to fractional ones.
How do I Link Two Calculators?

To share data or programs.
Using the \texttt{2nd \underline{LINK}} facility.

1. It is often useful to download data or a program from one TI-83 to another. This is done using the \texttt{2nd \underline{LINK}} facility. A link cable which comes with every calculator is required. One calculator is the TRANSMITTING and the other is RECEIVING, obviously the calculator containing the required data or program is the former. Plug the link cable firmly input the port on the bottom of both TI-83’s, ensure that this is firmly in place as failure to do so is the most common reason for failed linking.

2. Once this is done press \texttt{2nd \underline{LINK}} on both calculators.

3. On the TRANSMITTING CALCULATOR

   Ensure that the SEND menu is displayed.

   4. On this menu it is possible to choose what data is transmitted. If you want to transmit everything that is on this calculator choose \texttt{ALL+}. In this example only a few Programs are required to be transmitted so \texttt{3:Prgm} is chosen. A menu of all the programs stored on the calculator is shown.

5. Using the cursor keys and ENTER select the programs that you want to TRANSMIT. Notice that the selected items are marked by a black square.

6. On the RECEIVING CALCULATOR

   Ensure that the RECEIVE menu is displayed.

   Choose 1:Receive, this calculator will display a message “WAITING”.

7. The TRANSMITTING CALCULATOR

   Choose 1:Transmit from the TRANSMIT menu. Ensure that the RECEIVING CALCULATOR is “WAITING” before choosing transmit.

8. The transmission will take place.
How do enter a program from a listing?
Using the \texttt{PRGM} facility.

1. To allow a program listing to be entered choose

\texttt{PRGM NEW 1: Create New}

2. You must now enter the name of the new program.

\texttt{PROGRAM Name=MADLINE}

3. Once you have entered the name of the program you are now able to enter the listing.
The program commands used in the listing are available by pressing the \texttt{PRGM} key. There are 3 menus to choose.
They are shown here for your reference.

4. Press \texttt{ENTER} at the end of each line to move down.

5. Once you have completed the entry of the listing, to return to the home screen.

The commands on the \texttt{[PRGM][CTL]} menu

\begin{center}
\begin{tabular}{|l|}
\hline
\texttt{L:1Then 2:Else 3:If 4:For( 5:While 6:Repeat 7:End} \\
\texttt{8:If 9:Label 10:Goto 11:IS>( 12:DS<( 13:Menu( 14:Prgm} \\
\texttt{15:Disp 16:DispTable 17:DispGraph 18:Send} \\
\texttt{19:GetKey 20:GetCalc( 21:GetVar 22:GoTo 23:GraphStyle(} \\
\texttt{\hline}
\end{tabular}
\end{center}

The commands on the \texttt{[PRGM][I/O]} menu

\begin{center}
\begin{tabular}{|l|}
\hline
\texttt{L:Input 2:Prompt 3:Disp 4:DispGraph 5:DispTable} \\
\texttt{6:Output( 7:GetKey 8:Delete( 9:GetEntry 10:GetTable} \\
\texttt{11:GetVar 12:GetList 13:GetReal 14:GetInt 15:GetMatrix} \\
\texttt{16:GetCoord( 17:GetSyntax 18:GetFunction 19:GetSet} \\
\texttt{20:GetFunc( 21:GetParam 22:GetFunction( 23:GraphStyle(} \\
\texttt{\hline}
\end{tabular}
\end{center}