Graphing Calculator Instructions for the TI-89 Titanium

Getting around the calculator

Home Screen	Press HOME to do calculations
Decimal Answers	The TI-89 does symbolic operations so it will simplify fractions and radicals. It keeps answers in exact form. If you want a decimal answer, press Green Diamond (♦), ENTER to select ≈
Clear Home	To clear the home screen, press F1, 8: Clear Home

Solving Graphically – Use the green words above the function keys

Enter Equations	Press Green Diamond (♦), F1 to select Y= and enter your equation or function. At y1= type the left side of the equation At y2= type the right side of the equation Use the X button for the variable even if your function has a different letter for the variable
Absolute Value	To enter $\|x\|$, Press CATALOG and select abs(, type X)
Exponents	To enter x^2, type X ∧ 2
Radicals	To enter $\sqrt[3]{x}$, type X ∧ (1/3)
View the Graph	Press ♦F3 for GRAPH to see the graph If you can't see your graph or you can only see part of your graph then you need to adjust your viewing window
Set your Window	**Zoom Standard** Press F2, Zoom 6: for ZoomStandard [-10 to 10] on both axes with scales of 1 **Zoom Out** – if you can't see your graph try zooming out Press F2, Zoom 3: for ZoomOut until you can see part of your graph

	Set your Window Manually – To have a good viewing window you usually need to adjust one or more of the parameters manually. You want to see the whole graph and have the graph fill the viewing window. Press ♦F2 for WINDOW – **xmin**= the left bound of the window – **xmax**= the right bound of the window – **xscl**= the spacing of the tick marks on the x-axis – **ymin**= the lower bound of the window – **ymax**= the upper bound of the window – **yscl**= the spacing of the tick marks on the y-axis When the textbook gives you a viewing window the format is [xmin, xmax, xscl] by [ymin, ymax, yscl]. Press ♦F3 for GRAPH to return to the graph. Setting the window is a guess and check process. Try some values and return to the graph. If needed go back and adjust your window values again until you have a good viewing window.
Find the Solution(s) using Intersection	To find points of intersection, make sure you can see the intersection on your screen. Press F5 Math, 5: **Intersection** – **First curve?** The cursor will be on one of your functions, hit enter – **Second curve?** The calculator will move the cursor to the other function, hit enter. – **Lower Bound?** Move the cursor to the **left** side of the intersection (use left arrow) and hit enter – **Upper Bound?** Move the cursor to the **right** side of the intersection (use right arrow) and hit enter – (Some calculators just ask for a Guess - hit enter) – The x-value is the solution to the equation If there is more than one solution, repeat the process for each point of intersection.
Transfer your Graph to Paper	To transfer your graph to paper, view the table as explained below. You can use the table to plot points for each function.

Solving Numerically with a Table

Enter Equations	Press Green Diamond (♦), F1 to select Y= and enter your equation or function if you haven't already.

	At y1= type the left side of the equation At y2= type the right side of the equation The calculator uses the same y1 and y2 for the graph and table
View the Table	Press ♦F5 to select TABLE Use the up and down arrows to scroll up and down the table. Look for the row(s) where y1 = y2. The x-value(s) are the solutions
Table Setup	If you don't see any solutions you need to adjust your increment Press ♦F4 for TBLSET You can adjust the increment with Δtbl Δtbl…… 1 means the table goes by 1's Δtbl…… 0.1 will give solutions to the tenths place Δtbl…… 0.01 will give solutions to the hundredths place

Finding Points on a Graph

Enter Equation	Press Green Diamond (♦), F1 to select Y= and enter your equation or function.
Trace	Press F2 to select **Trace**. When in trace mode you can move left and right along a curve. You can type an x-value and the calculator will show you the y-value
Value	Another way to find a y-value is F5 Math, 1: **Value**. – **Eval x=?** Type an x-value and it will show you the y-value
Zero (x-intercepts)	To find x-intercepts, use F5 Math, 2: **Zero** – **Lower Bound?** Move the cursor to the **left** side of the intercept (use left arrow) and hit enter – **Upper Bound?** Move the cursor to the **right** side of the intercept (use right arrow) and hit enter
Minimum or Maximum (The Vertex of a Parabola)	To find the vertex, use F5 Math, 3: **Minimum** if the graph opens up or F5 Math, 4: **Maximum** if the graph opens down – **Lower Bound?** Move the cursor to the **left** side of the vertex (use left arrow) and hit enter – **Upper Bound?** Move the cursor to the **right** side of the vertex (use right arrow) and hit enter