

Getting Ready for Quadratics With TI-Nspire

1) Creating a Scatter plot

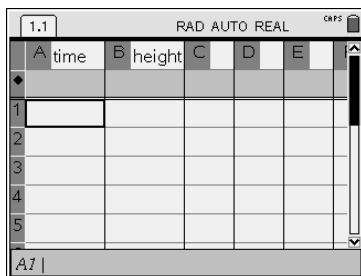
The relationship shown in the table represents the **height, h metres**, of a fireworks rocket **t seconds** after it is launched.

t(sec)	h(m)
0	0
1	34.3
2	58.8
3	73.5
4	78.4
5	73.5
6	58.8
7	34.3



Follow the steps below to create a scatter plot of this data on your TI-Nspire.

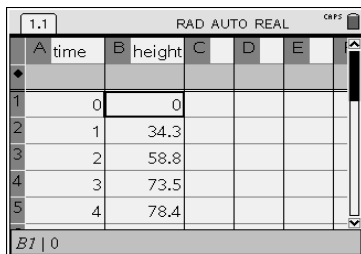
Press to open a new document and Select **3: Lists and Spreadsheets**. (If you are asked if you wish to save a previous document, just click on "No")



In the first column in the box beside A, type in **time**. Press . You will want to re-size the width of the column. To resize select (for Actions), then (for resize). Adjust size of the column using arrows on the nav pad.

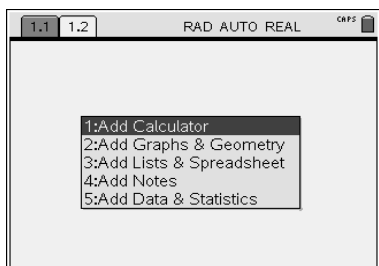
Press to lock in the width you have chosen. Press .

Repeat the same process to label Column B as **height**.

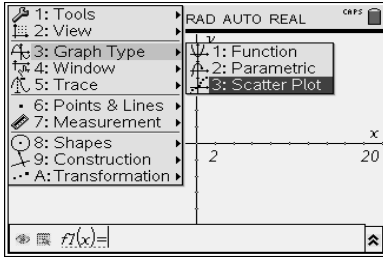


Enter the data from the table provided.

Look in the top left of your screen and notice that you are on page **1.1** in your document.

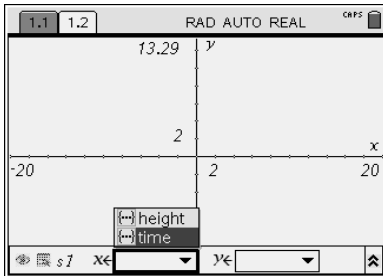


Press to insert a new page. Choose **2:Graphs & Geometry**

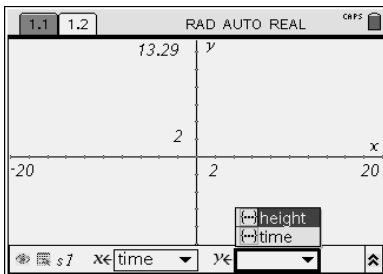


Change your graph type to **Scatter Plot** by pressing

(menu) **3** **3**.

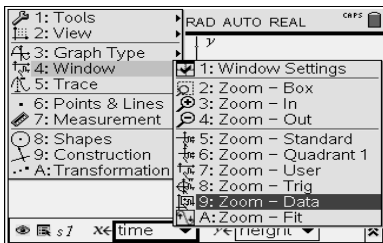


Your cursor will be in the x box at the bottom of your screen. Use the Nav pad to click **(cursor)** and select time for your horizontal axis. Press **(no error)** and you will see time pasted in the x box.



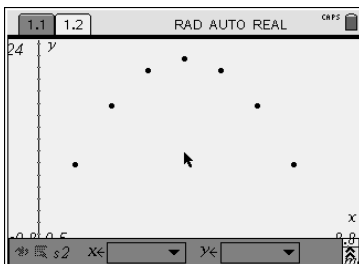
Press **(tab)** to highlight the y box of the scatter plot.

Use the Nav pad to click **(cursor)** and select height for your vertical axis. Press **(no error)** and you will see height pasted in the y box.



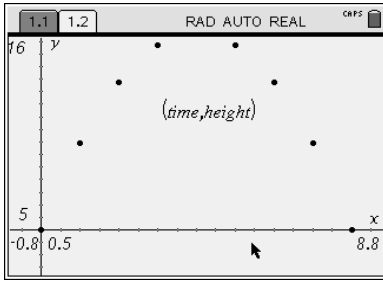
You will need to re-size the window so you can see all the points from the table.

Press **(menu)** **4** **9**.



Your scatter plot should now be showing on your screen.

Notice that you are on page 1.2 of your document.



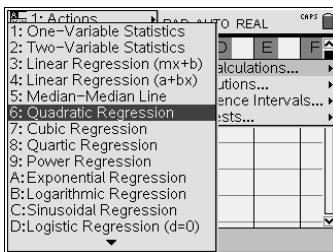
Press **ctrl** **G** to enable you to see the horizontal axis.

To grab the ordered pair (time,height) from the bottom right corner of your screen, move cursor on top of it and hold click button down . Use nav pad arrows to place it somewhere on your screen. Press **esc**.

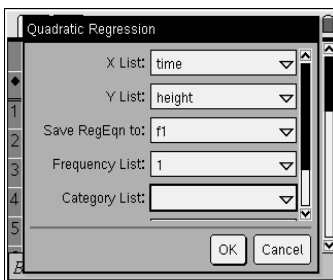
2) Finding a Curve of Best Fit

	A	B	C	D	E
1	time	height			
2	0	0			
3	1	34.3			
4	2	58.8			
5	3	73.5			
	4	78.4			

To go back to the first screen containing your spreadsheet press **ctrl** and left arrow on the nav pad.



Press **menu** **4** **1** **6** to select Quadratic Regression



Enter the values shown in the pop-up menu on the left.

To enter each value use the **click** button to make your selection and then press **enter**. Use the **tab** key to move from box to box.

Notice you have saved the equation in f1. That will come in handy when you want to see a graph of the curve of best fit.

When finished tab down to **OK** and click on it .

time	height	C	D
0	0	Title	Quadratic Regre...
1	34.3	Reg...	$a*x^2+b*x+c$
2	58.8	a	-4.9
3	73.5	b	39.2
4	78.4	c	$-2.E-12$

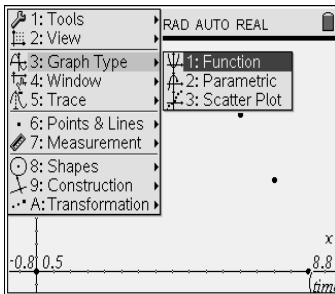
The quadratic regression information will be pasted in Columns C and D.

To resize column D select **[menu]** **1**

(for Actions), then **2** (for resize). Adjust the size of the column using arrows on the nav pad.

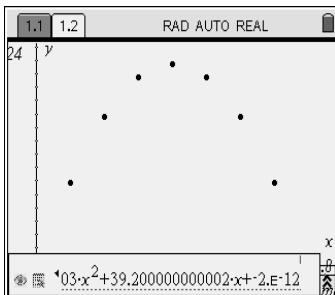
Press **enter** to lock in the width you have chosen.

Press **esc**.



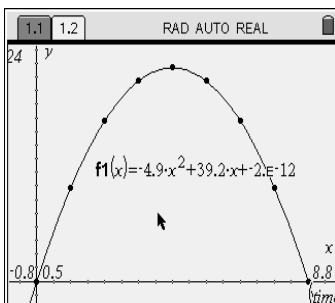
Press **ctrl** and **right arrow** to get back to your scatter plot

Select **[menu]** **3** **1** to select **Function**.



Notice the function f2 is showing at the bottom of your screen

Use the **up arrow** on the **Nav pad** to move you to f1. You will see that your equation has been pasted there.

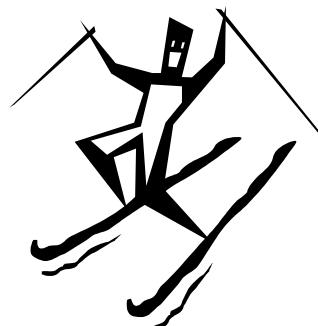


Press **enter** and your equation will be graphed.

Use **ctrl** **G** to get rid of the function entry line at the bottom of the screen.

3) Tracing a Function

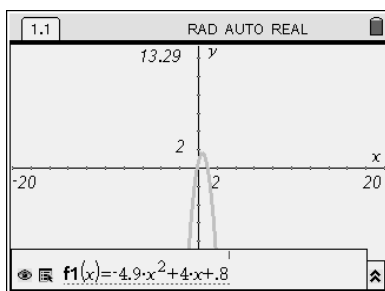
A water-skier slides up a ramp and flies off the end. His height above the water is given by the equation $y = -4.9x^2 + 4x + 0.8$, where x is the time, in seconds, after the skier leaves the ramp, and y is the height, in metres, of the skier above the water.



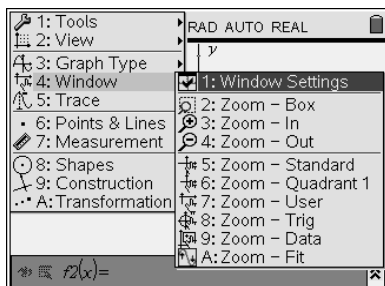
Press HOME 8 1 and under **Display Digits** select **Float 3** by clicking on the pull down menu.

Press ENTER . Use the TAB key to tab down to **Apply to System** and press ENTER . Click on **OK** when asked "Do you wish to apply current settings to system settings?".

Press HOME 6 to open a new document and Select **2:Graphs and Geometry**. (If you are asked if you wish to save a previous document, just click on "No").

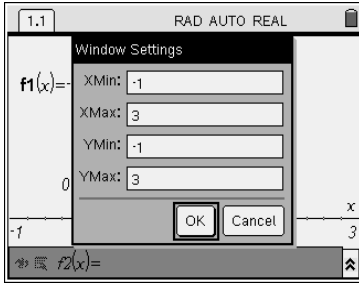


Type in the equation in the **f1** position at the bottom of your screen.

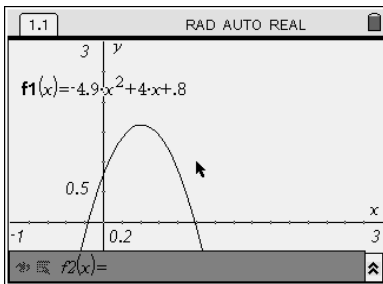


In order to zoom in on the important part of your graph, adjust the window settings by pressing

MENU 4 1 .

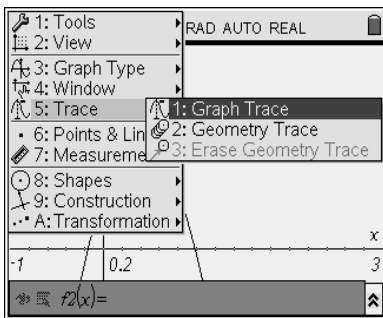


Type in the new values for your window. Use the **(tab)** key to move from one box to the other. Click on **OK**.

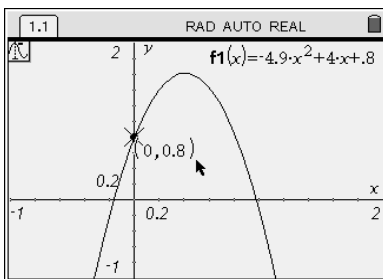


You now have a better view of your graph.

To get rid of the equation entry at the bottom of the screen press **(ctrl) (G)**.

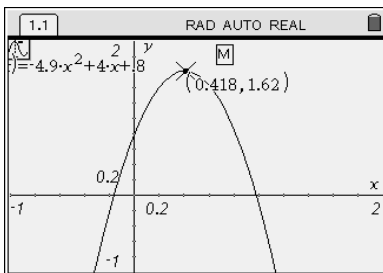


Press **(menu) (5) (1)** in order to locate specific points on your graph.



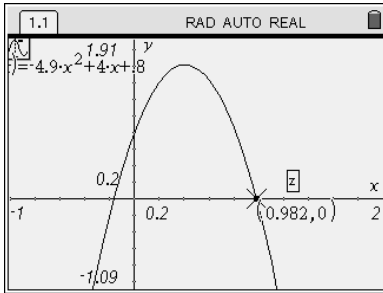
The first point you will see is **the y-intercept**.

What does this point mean relative to the water-skier?
(Remember every ordered pair stands for a (time,height) value.)



Use the right arrow key to move your point along the graph. You will know you have reached **the vertex** of the graph when you see an **M** appear. (M stands for maximum)

What does this point mean relative to the water-skier?



Continue tracing using the right arrow on the nav pad until you reach **the x-intercept**. You will know it is the intercept when a small z appears beside your point. (z stands for zero)

What does this point mean relative to the water-skier?