


Graph & Table Menu

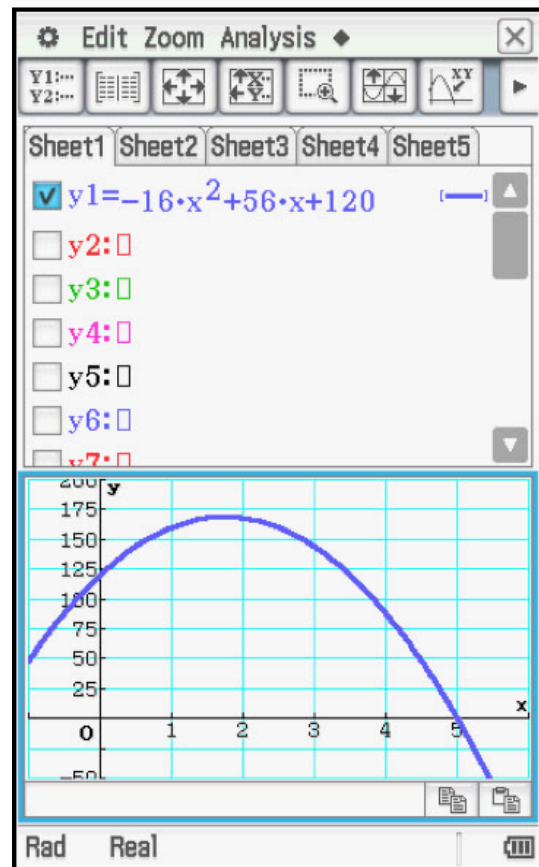
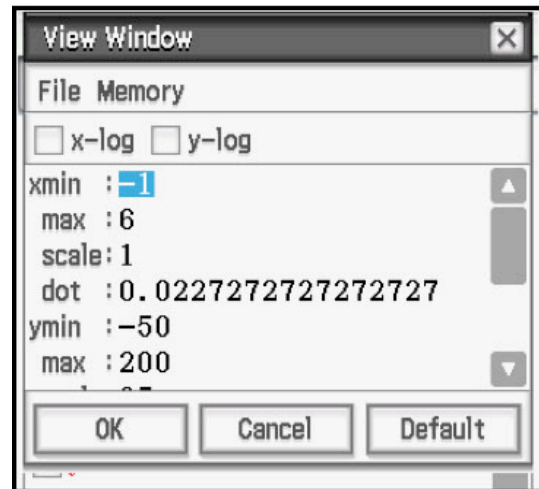
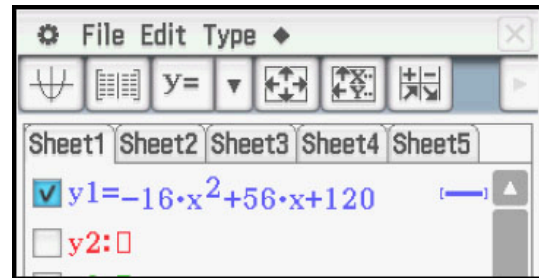
1. If a ball is tossed upwards with an initial velocity of 56 ft/sec from an initial height of 120 feet, graph the height of the ball, as a function of time.

From the Menu, select the Graph & Table icon.

Enter the function as y1.





To set a window tap , enter the values and tap **OK**.

Tap  to graph.




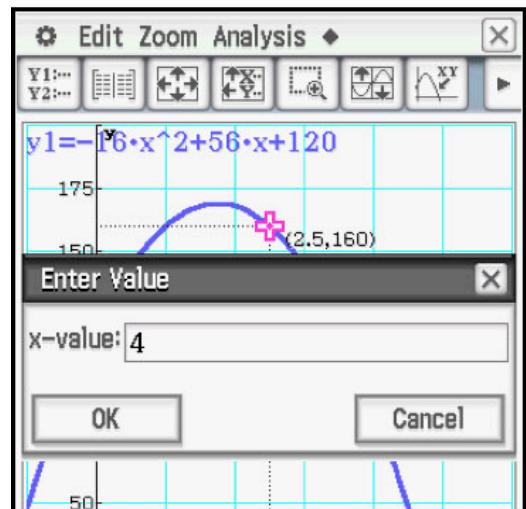
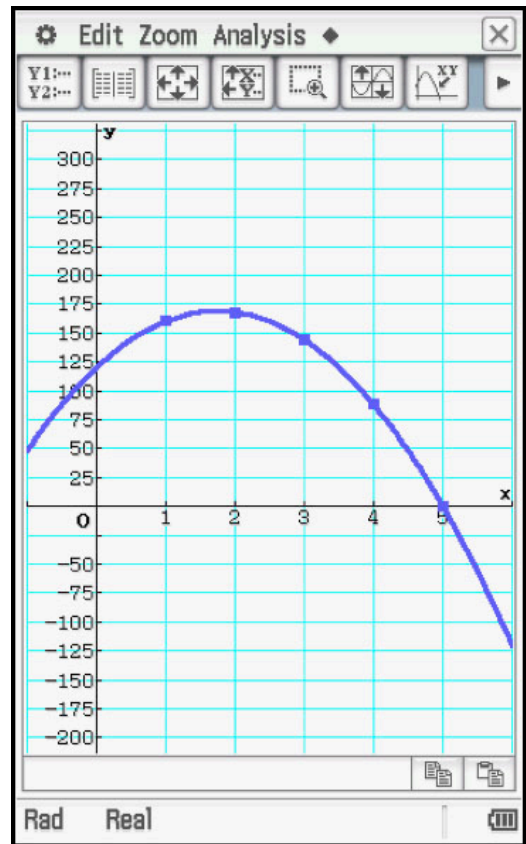


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Tap  to plot the graph in a full screen. To adjust the window, use     to scroll in any of the four directions,  to zoom in, and  to zoom out.

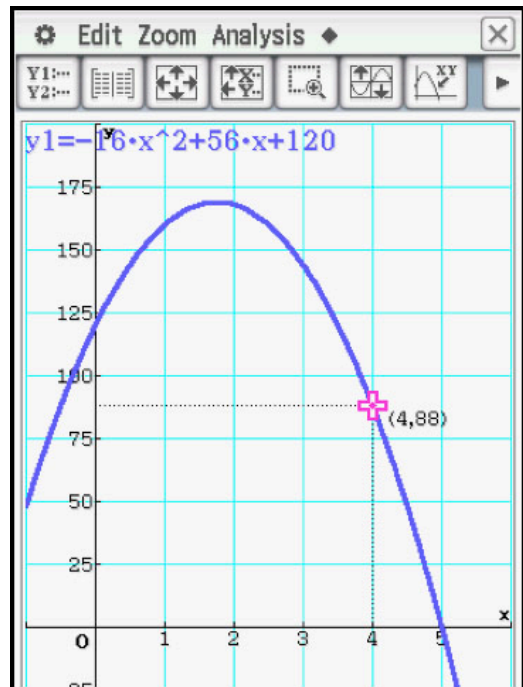
2. Compute the height of the ball at time 4 seconds.

To trace, tap . To find a specific value, press any one of the number keys; this will open a dialogue box. Then tap **OK**.





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Press **EXE** to mark the point and keep the coordinates on the display.



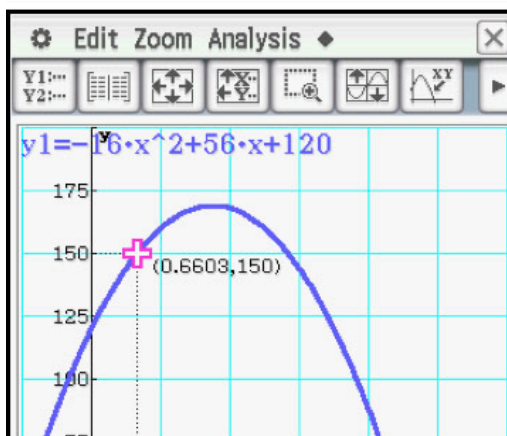
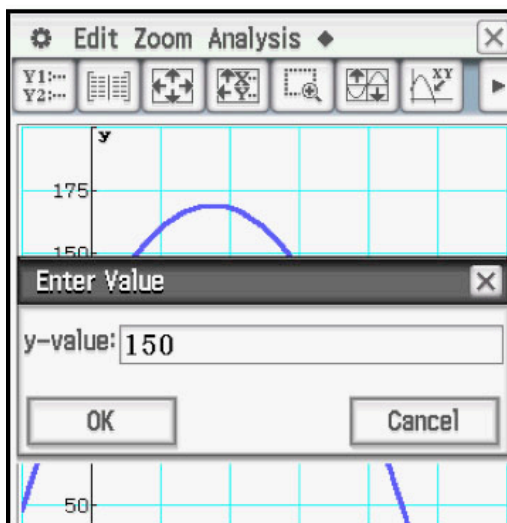
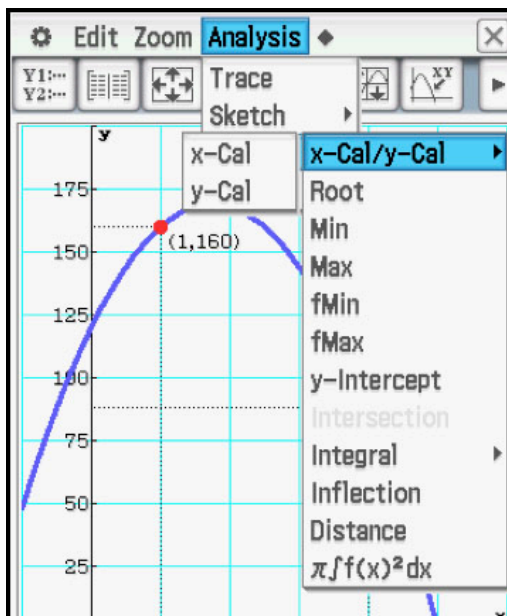


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3. Compute the times when the ball is at height 150 feet.

Tap **Analysis**, **G-Solve**, **x-Cal/y-Cal**, **x-Cal**.

Enter the value for y and tap **OK**.





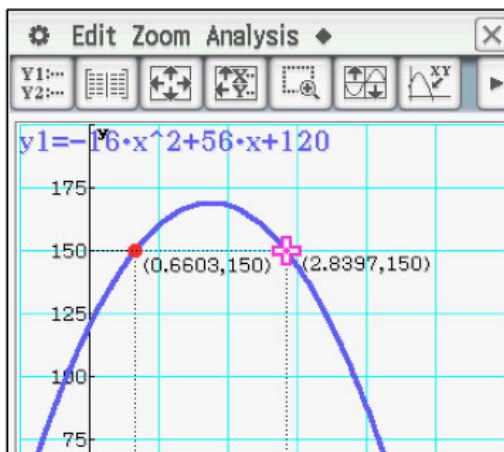
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Press **[EXE]** to mark the point and keep the coordinates on the display.

Press **[▶]** to move to the second point.



4. Compute the time when the ball hits the ground.

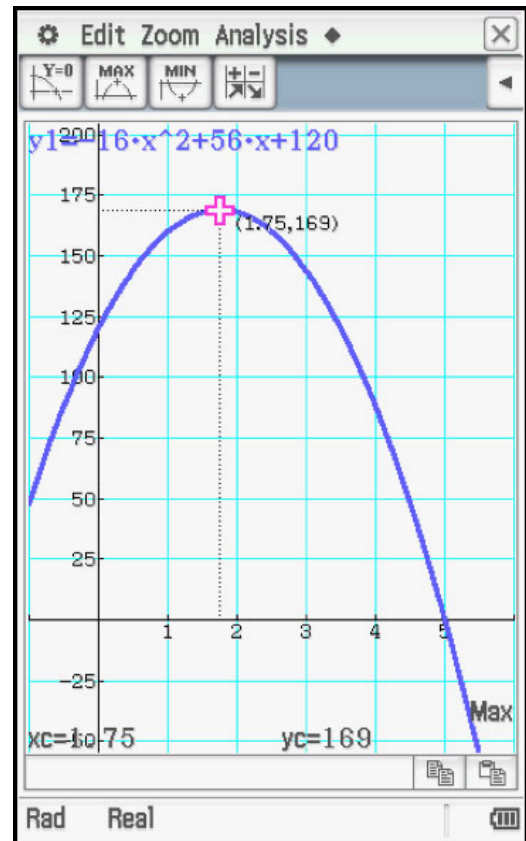
To compute an x-intercept, tap the **[Y=0]** icon at the top of the screen, then tap **[▶]**.



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5. Compute the coordinates of the maximum point.

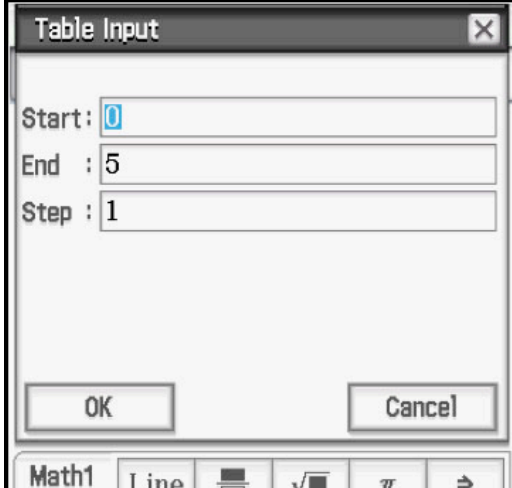
For a maximum point, tap the  icon at the top of the screen, then tap .



6. Construct a table of values for times $\{0, 1, 2, 3, 4, 5\}$.

To set the table, tap .

Enter the values and tap **OK**.



The figure shows a 'Table Input' dialog box. It has three input fields: 'Start' with the value 0, 'End' with the value 5, and 'Step' with the value 1. There are 'OK' and 'Cancel' buttons at the bottom. At the very bottom of the screen, there is a toolbar with 'Math1', 'Line', a square icon, a square root icon, a pi symbol, and a right arrow.



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To view the table, tap .

The screenshot shows the 'Edit T-Fact Graph' window. At the top, there are icons for graphing and zooming. Below that, there are tabs for 'Sheet1', 'Sheet2', 'Sheet3', 'Sheet4', and 'Sheet5'. A list of functions is shown, with the first one, $y1 = -16 \cdot x^2 + 56 \cdot x + 120$, selected and checked. Below the list, a table is displayed with the following data:

x	y1
0	120
1	160
2	168
3	144
4	88
5	0

At the bottom of the window, there are icons for 'Rad' and 'Real' modes, and a table icon.

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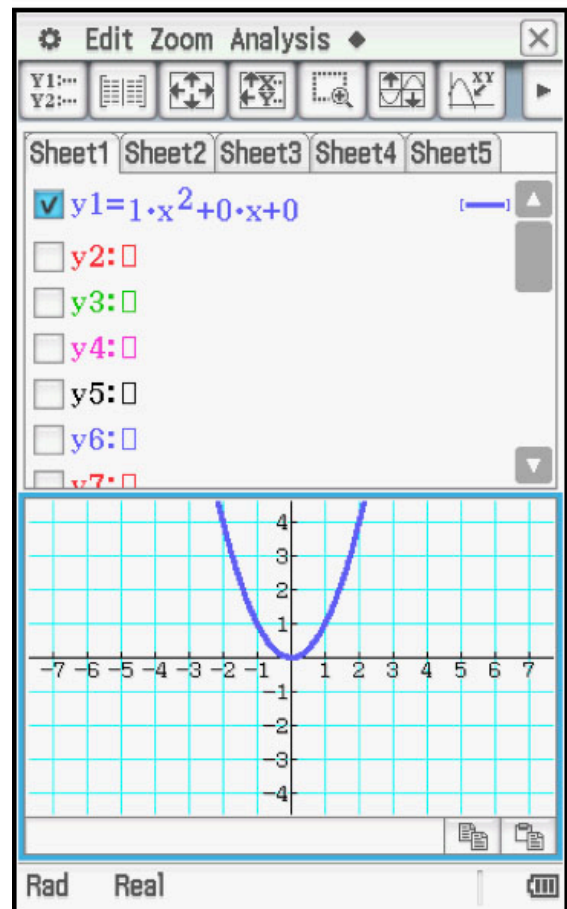
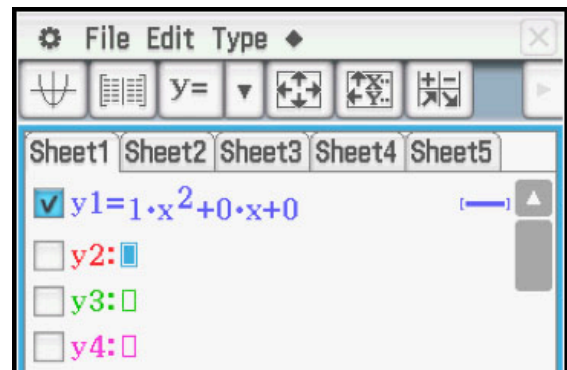
These examples have used the coefficient of -16 for the t^2 term. The value of that coefficient could be different, based on conditions such as altitude. It would also be different on the moon or another planet, and of course, if different units for distance and/or time were used. A more general equation for the model would be $h = -\frac{1}{2}gt^2 + vt + c$. This is an application of the general quadratic $y = ax^2 + bx + c$.

7. Explore the transformations of the graph of the function $y = ax^2 + bx + c$ as the coefficients a , b , c are changed.

Enter the function $y1 = 1x^2 + 0x + 0$. The three coefficients are needed, as explained later.

Set the window to **Default**.

Graph the equation.



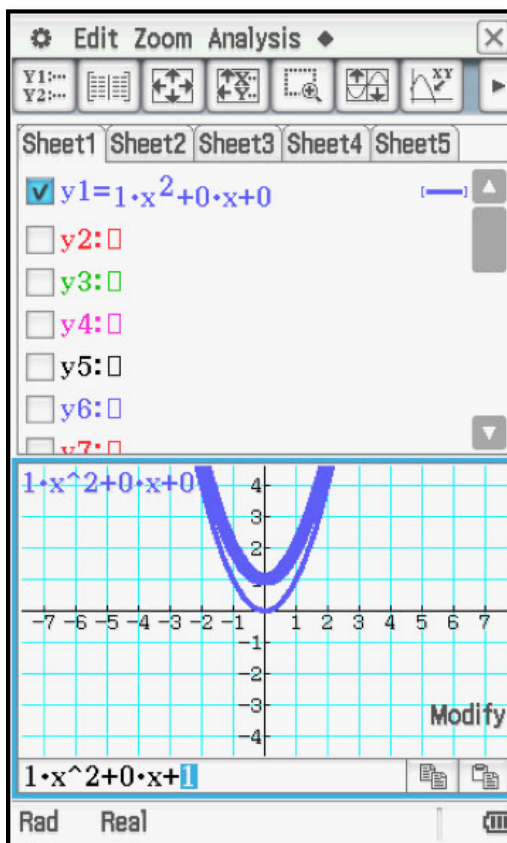
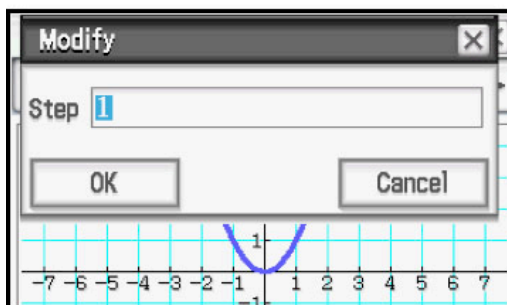
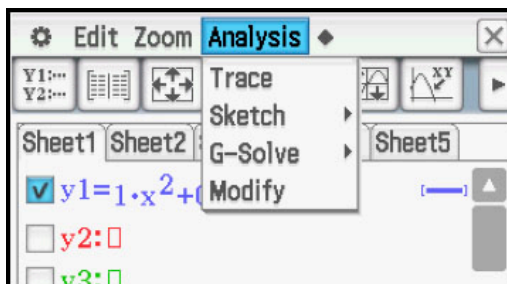


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Tap **Analysis**, **Modify**.

Enter 1 for the **Step** size and tap **OK**.

The word **Modify** appears on the graph screen, the graph is thicker, and the function rule appears in a dialogue box at the bottom. To explore the transformations, tap any one of the 3 coefficients and highlight it. Tap on the graph screen. Now use **▶** and **◀** to increase or decrease the coefficient, respectively, and see the graph transform.





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Alternately, to make changes without a step size, tap any one of the 3 coefficients, highlight it, enter a new value and press **EXE**.

