# 10.3 Find Minimum and Maximum Values and Zeros

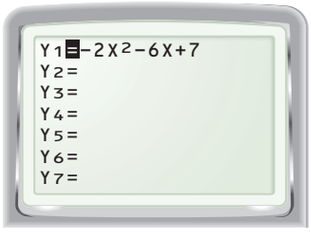
**QUESTION** How can you find the minumum or maximum value and the zeros of a quadratic function using a graphing calculator?

## EXAMPLE 1 Find the maximum value of a function

**Find the maximum value of the function $y = -2x^2 - 6x + 7$.**

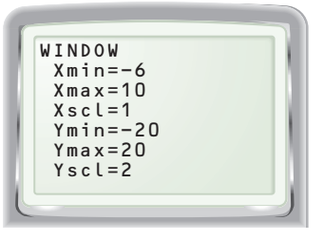
### STEP 1 Enter the function

Press Y= and enter the function $y = -2x^2 - 6x + 7$.



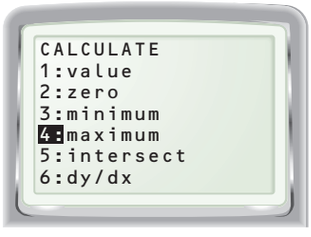

### STEP 2 Adjust the window

Display the graph. Adjust the viewing window as needed so that the vertex of the parabola is visible.



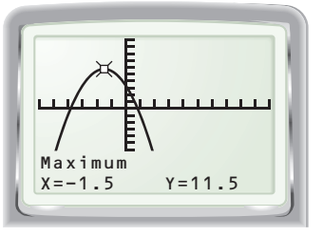

### STEP 3 Use the maximum feature

The *maximum* feature is located under the CALCULATE menu.




### STEP 4 Find the maximum value

Follow the graphing calculator's procedure to find the maximum of the function.




▶ The maximum value of the function $y = -2x^2 - 6x + 7$ is 11.5.

**PRACTICE**

**Find the maximum or minimum value of the function.**

1. $y = 3x^2 - 8x + 7$
2. $y = -x^2 + 3x + 10$
3. $y = -4x^2 - 6x - 6$
4. $y = 5x^2 + 10x - 8$
5. $y = -1.4x^2 + 3.8x - 6.1$
6. $y = 2.57x^2 - 8.45x - 5.04$