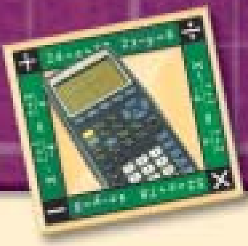


Graphing Calculator Investigation

A Follow-Up of Lesson 11-3

Sharp EL-9600c

Graphs of Radical Equations

In order for a square root to be a real number, the radicand cannot be negative. When graphing a radical equation, determine when the radicand would be negative and exclude those values from the domain.

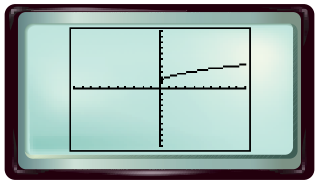
Example 1

Graph $y = \sqrt{x}$. State the domain of the graph.

Enter the equation in the Y= list.

KEYSTROKES: [Y=] [2nd F] [√] [X/θ/T/n] [GRAPH]

From the graph, you can see that the domain of x is $\{x \mid x \geq 0\}$.



[−10, 10] scl: 1 by [−10, 10] scl: 1

Example 2

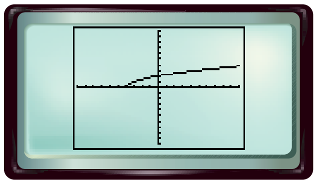
Graph $y = \sqrt{x + 4}$. State the domain of the graph.

Enter the equation in the Y= list.

KEYSTROKES: [Y=] [2nd F] [√] [(] [X/θ/T/n] [+] 4 [)] [GRAPH]

The value of the radicand will be positive when $x + 4 \geq 0$, or when $x \geq -4$. So the domain of x is $\{x \mid x \geq -4\}$.

This graph looks like the graph of $y = \sqrt{x}$ shifted left 4 units.



[−10, 10] scl: 1 by [−10, 10] scl: 1

Exercises 1–9. See pp. 639A–639B.

Graph each equation and sketch the graph on your paper. State the domain of the graph. Then describe how the graph differs from the parent function $y = \sqrt{x}$.

1. $y = \sqrt{x + 1}$ **2.** $y = \sqrt{x} - 3$ **3.** $y = \sqrt{x + 2}$

4. $y = \sqrt{x - 5}$ **5.** $y = \sqrt{-x}$ **6.** $y = \sqrt{3x}$

7. $y = -\sqrt{x}$ **8.** $y = \sqrt{1 - x} + 6$ **9.** $y = \sqrt{2x + 5} - 4$

10. Is the graph of $x = y^2$ a function? Explain your reasoning. **10–11. See margin.**

11. Does the equation $x^2 + y^2 = 1$ determine y as a function of x? Explain.

12. Graph $y = |x| \pm \sqrt{1 - x^2}$ in the window defined by [−2, 2] scl: 1 by [−2, 2] scl: 1. Describe the graph. **heart**

www.algebra1.com/other_calculator_keystrokes