LESSON

7.5

Graphing Calculator Activity

For use with pages 426–431

GOAL **To discover how to shift the graph of a square root function horizontally and vertically**

The standard form of the square root function is $y = a\sqrt{x - h} + k$. In the function $y = \sqrt{x}$, which was presented in Lesson 7.4, you do not see the *a, h,* or *k* because $a = 1$ and both *h* and *k* are zero.

Activity

❶ Enter the equation $y = \sqrt{x}$ into your graphing calculator as Y_1 and plot the graph in a standard viewing window.

❷ Enter and plot the graph of each equation one at a time as Y_2. Compare each graph with the graph of $y = \sqrt{x}$ from Step 1.

    a. $y = \sqrt{x - 5}$ **b.** $y = \sqrt{x + 7}$

❸ Identify *h* in each equation of Step 2.

❹ Enter and plot the graph of each equation one at a time as Y_2. Compare each graph with the graph of $y = \sqrt{x}$ from Step 1.

❺ Identify *k* in each equation of Step 4.

❻ Enter $y = \sqrt{x - 2} + 8$ as Y_2 and plot the graph. Compare the graph with the graph of $y = \sqrt{x}$ from Step 1.

Exercises

1. Sketch the graph of each equation below. Use your graphing calculator to check your answer.

    a. $y = \sqrt{x - 3} + 5$ **b.** $y = \sqrt{x + 1} - 4$ **c.** $y = \sqrt{x + 2} + 6$

In Exercises 2–5, complete the statement.

2. If *h* is positive, the graph will shift to the _____ *h* units.

3. If *h* is negative, the graph will shift to the _____ *h* units.

4. If *k* is positive, the graph will shift _____ *k* units.

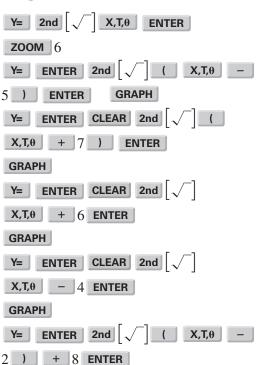**5.** If *k* is negative, the graph will shift _____ *k* units.

See page 68 for keystrokes.

Graphing Calculator Activity

For use with pages 426–436

TI-82

Y= | 2nd | [√] | X,T,θ | ENTER

ZOOM | 6

Y= | ENTER | 2nd | [√] | (| X,T,θ | −
5 |) | ENTER | GRAPH

Y= | ENTER | CLEAR | 2nd | [√] | (
X,T,θ | + | 7 |) | ENTER
GRAPH

Y= | ENTER | CLEAR | 2nd | [√]
X,T,θ | + | 6 | ENTER
GRAPH

Y= | ENTER | CLEAR | 2nd | [√]
X,T,θ | − | 4 | ENTER
GRAPH

Y= | ENTER | 2nd | [√] | (| X,T,θ | −
2 |) | + | 8 | ENTER
GRAPH

TI-83

Y= | 2nd | [√] | X/θ/T/*n* |) | ENTER

ZOOM | 6

Y= | ENTER | 2nd | [√] | X,T,θ,*n* | − | 5
) | ENTER | GRAPH

Y= | ENTER | CLEAR | 2nd | [√]
X,T,θ,*n* | + | 7 |) | ENTER
GRAPH

Y= | ENTER | CLEAR | 2nd | [√] | X,T,θ,*n* | − | 2
) | + | 8 | ENTER
GRAPH

SHARP EL-9600c

Y= | 2ndF | [√] | X/θ/T/*n* | ENTER

ZOOM | [A] 5

Y= | ENTER | 2ndF | [√] | X/θ/T/*n* | − | 5 | ENTER
GRAPH

Y= | ENTER | CL | 2ndF | [√]
X/θ/T/*n* | + | 7 | ENTER | GRAPH

Y= | ENTER | CL | 2ndF | [√]
X/θ/T/*n* | ▶ | ÷ | 6 | ENTER
GRAPH

Y= | ENTER | CL | 2ndF | [√]
X/θ/T/*n* | ▶ | − | 6 | ENTER
GRAPH

Y= | ENTER | CL | 2ndF | [√] | X/θ/T/*n* | −
2 | ▶ | + | 8 | ENTER
GRAPH

CASIO CFX-9850GA PLUS

From the main menu, choose GRAPH.

SHIFT | [√] | X,θ,T | EXE

SHIFT | F3 | F3 | EXIT | F6

EXIT | SHIFT | [√] | (| X,θ,T | −
5 |) | EXE | F6

EXIT | ▲ | SHIFT | [√] | (| X,θ,T | −
7 |) | EXE | F6

EXIT | ▲ | SHIFT | [√] | X,θ,T | + | 6
EXE | F6

EXIT | ▲ | SHIFT | [√] | X,θ,T | − | 4
EXE | F6

EXIT | ▲ | SHIFT | [√] | (| X,θ,T | −
2 |) | + | 8 | EXE | F6

Graphing Calculator Activity Keystrokes

For use with pages 430–436

Excel Keystrokes for Exercise 34

Open computer to excel program.

Select cell A1.

x **TAB** $y = 2x + 3$ **TAB** $y = 2x - 9$ **TAB** col. B–col. C **ENTER**

Enter x-values -3 to 4 in cells A2–A9.

Select cell B2.

$= 2{^*}A2 + 3$ **ENTER**

Select cell B2. From the **Edit** menu, choose **Copy**.

Select cells B3–B9. from the **Edit** menu choose **Paste.**

Select cell C2.

$= 2{^*}A2 - 9$ **ENTER**

Select cell C2. From the **Edit** menu, choose **Copy.**

Select cells C3–C9. from the **Edit** menu, choose **Paste.**

Select cell D2.

$= B2 - C2$ **ENTER**

Select cell D2. From the **Edit** menu, choose **Copy.**

Select cells D3–D9. From the **Edit** menu, choose **Paste.**