Graphing Technology Lab

Graphing *n*th Root Functions

Sharp EL-9900C

You can use a Sharp EL-9900C graphing calculator to graph *n*th root functions.

Clear the calculator memory first.

KEYSTROKES: 2ndF [OPTION] ALPHA [E] 2 CL ENTER

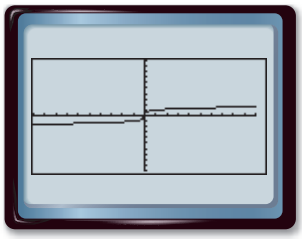
EXAMPLE 1 Graph an *n*th Root Function

Graph $y = \sqrt[5]{x}$.

Enter the equation as Y1 and graph in a standard viewing window.

KEYSTROKES: Y= 5 2ndF [a$\sqrt{\ }$] X/θ/T/*n* ZOOM 5: Default

Another way to enter the equation is to use $y = x^{\frac{1}{5}}$. You will learn about this later in Chapter 7.



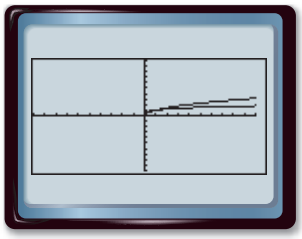
[−10, 10] scl: 1 by [−10, 10] scl: 1

EXAMPLE 2 *n*th Root Functions with Different Roots

Graph and compare $y = \sqrt{x}$ and $y = \sqrt[4]{x}$.

Enter $y = \sqrt{x}$ as Y1 and $y = \sqrt[4]{x}$ as Y2. Then graph them in a standard viewing window.

KEYSTROKES: Y= CL 2ndF [$\sqrt{\ }$] X/θ/T/*n* ENTER 4 2ndF [a$\sqrt{\ }$] X/θ/T/*n* ENTER ZOOM 5: Default



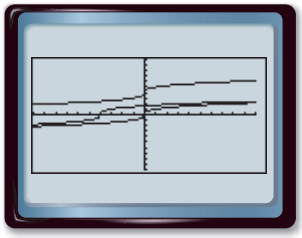
[−10, 10] scl: 1 by [−10, 10] scl: 1

EXAMPLE 3 *n*th Root Functions with Different Radicands

Graph and compare $y = \sqrt[3]{x}$, $y = \sqrt[3]{x+4}$, and $y = \sqrt[3]{x} + 4$.

Enter $y = \sqrt[3]{x}$ as Y1, $y = \sqrt[3]{x+4}$ as Y2, and $y = \sqrt[3]{x} + 4$ as Y3. Then graph them in a standard viewing window.

KEYSTROKES: Y= CL 3 2ndF [a$\sqrt{\ }$] X/θ/T/*n* ENTER CL 3 2ndF [a$\sqrt{\ }$] (X/θ/T/*n* + 4) ENTER CL 3 2ndF [a$\sqrt{\ }$] X/θ/T/*n* ▶ + 4 ENTER ZOOM 5: Default



[−10, 10] scl: 1 by [−10, 10] scl: 1

Exercises

Graph each function.

1. $y = \sqrt[4]{x}$

2. $y = \sqrt[4]{x + 2}$

3. $y = \sqrt[4]{x} + 2$

4. $y = \sqrt[5]{x}$

5. $y = \sqrt[5]{x - 5}$

6. $y = \sqrt[5]{x} - 5$

7. What is the effect of adding or subtracting a constant under the radical sign?

8. What is the effect of adding or subtracting a constant outside the radical sign?