

# Cubic and Cube Root Functions

The cubic function represents the power of 3.

$$y = x^3$$

The cube root function is the inverse of the cubic function.

$$y = \sqrt[3]{x}$$

Complete the following tables:

$$y = x^3$$

x	y
-3	-27
-2	-8
-1	-1
0	0
1	1
2	8
3	27

$$y = \sqrt[3]{x}$$

x	y
-8	-2
-4	-1.587
-1	-1
0	0
1	1
4	1.587
8	2

$$\text{Given } f(x) = -2(3 - 2x)^3 + 1$$

Evaluate  $f(3)$

$$-2(3 - 2(3))^3 + 1$$

$$-2(3 - 6)^3 + 1$$

$$-2(-3)^3 + 1$$

$$-2(-27) + 1$$

$$54 + 1$$

$$55$$

Evaluate  $f(x) = -4$

$$-4 = -2(3 - 2x)^3 + 1$$

$$-5 = -2(3 - 2x)^3$$

$$2.5 = (3 - 2x)^3$$

$$1.357 = 3 - 2x$$

$$-1.642 = -2x$$

$$.821 = x$$

$$\text{Given } g(x) = \frac{1}{2} \sqrt[3]{2x + 1} + 4$$

Evaluate  $g(-5)$

$$\frac{1}{2} \sqrt[3]{2(-5) + 1} + 4$$

$$\frac{1}{2} \sqrt[3]{-10 + 1} + 4$$

$$\frac{1}{2} \sqrt[3]{-9} + 4$$

$$\frac{1}{2} (-2.08) + 4$$

$$-1.04 + 4$$

$$2.96$$

Evaluate  $f(x) = -11$

$$-11 = \frac{1}{2} \sqrt[3]{2x + 1} + 4$$

$$-15 = \frac{1}{2} \sqrt[3]{2x + 1}$$

$$-30 = \sqrt[3]{2x + 1}$$

$$-27000 = 2x + 1$$

$$-27001 = 2x$$

$$x = -13500.5$$