Name _____ Period _____

7.1B *Graphing Square Root Functions*

1. Look at the following function in its different forms.

Equation: $y = \sqrt{x-3} + 5$

Graph:

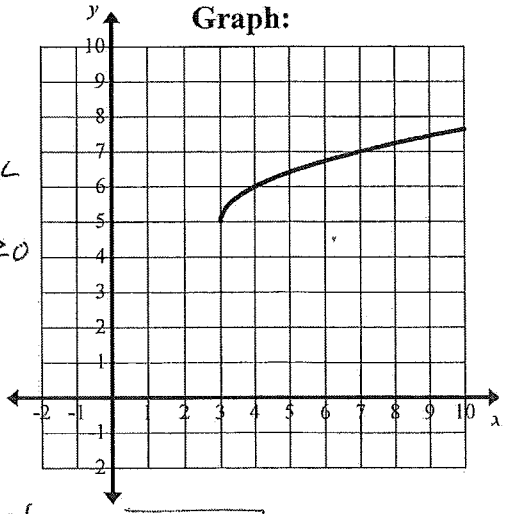


Table of Values:

x	y
0	error
1	error
2	error
3	5
4	6
5	6.4142
6	6.7321
7	7
8	7.2361
9	7.4495

a) What values can't x be? Why?

X cannot be less than 3; The square root of a negative is NOT REAL

b) What values can't y be? Why?

y can't be less than 5; $\sqrt{x-3}$ must be ≥0 then add 5, so y ≥ 5.

c) How can we tell what the domain and range are by looking at the equation?

For the domain, the radicand must be ≥ 0, then solve for x; $x-3 \geq 0$ ($x \geq 3$)
For the range, y ≥ the number added after the radical, so $y \geq 5$

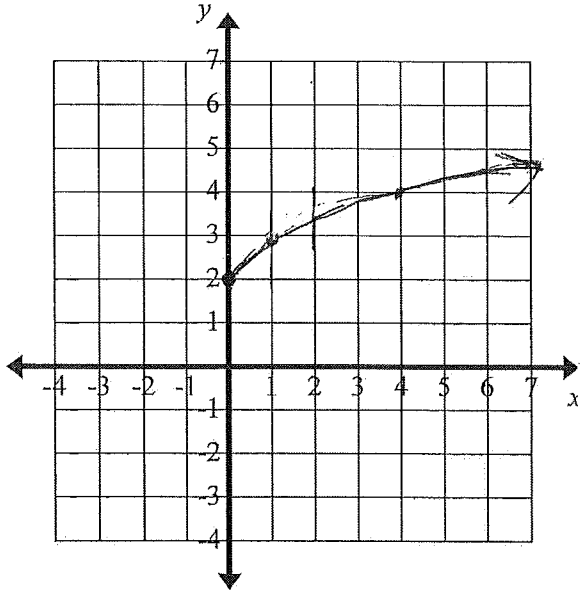
d) How can we tell what the domain and range are by looking at the graph?

Look at the (x, y) coordinates of the starting point of the sq. root curve (x, y)

e) How can we tell what the domain and range are by looking at the table of values?

Look at the first point (x, y) in the table after the last error value for y.

7. $y = \sqrt{x} + 2$

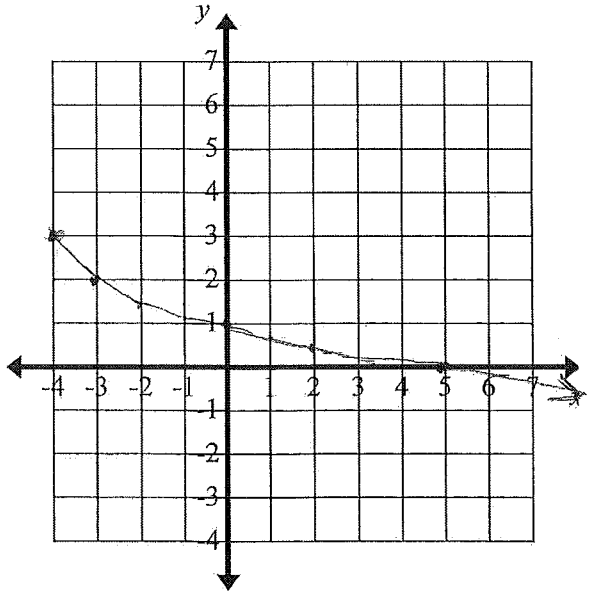


Increasing or decreasing ? (Circle one)

Domain $x \geq 0$ Range $y \geq 2$

x-intercept none y-intercept (0, 2)

8. $y = -\sqrt{x+4} + 3$



Increasing or decreasing ? (Circle one)

Domain $x \geq -4$ Range $y \leq 3$

x-intercept (5, 0) y-intercept (0, 1)

18. Write a square root function that has the following domain and range.

a) Domain: $x \geq 5$ Range: $y \geq 2$

$y = \sqrt{x-5} + 2$

b) Domain: $x \geq -7$ Range: $y \leq 10$

$y = -\sqrt{x+7} + 10$

c) Domain: $x \geq 0$ Range: $y \geq 9$

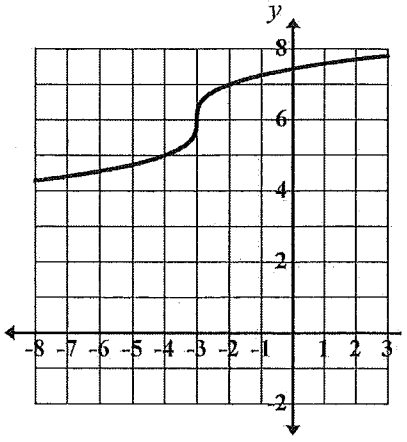
$y = \sqrt{x} + 9$

Section 7.1B

7.1C *Graphing Cube Root Functions*

1. Look at the following function in its different forms.

[A] Graph



[B] Table of values

x	y
–30	3
–11	4
–4	5
–3	6
–2	7
5	8
24	9

[C] Equation

$y = \sqrt[3]{x+3} + 6$

a) Are there any Domain restrictions? NO

How do you know? A cubic root can be negative as well as positive or 0.

b) Are there any Range restrictions? NO

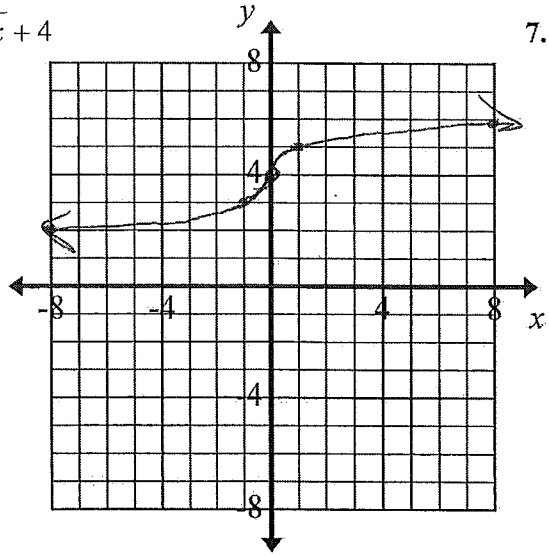
How do you know? Since X can be any real number, the cubic root can be negative, positive, or 0.

c) What is the point of inflection? $(-3, 6)$

d) How can we tell what the point of inflection is by looking at the equation? For the x-coordinate, set the radicand equal to 0 and solve for x. The y-coordinate is the number added to the radical.

e) Is the graph increasing or decreasing? How can you tell from the equation? The coefficient of the radical (1 in this case) is positive.

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

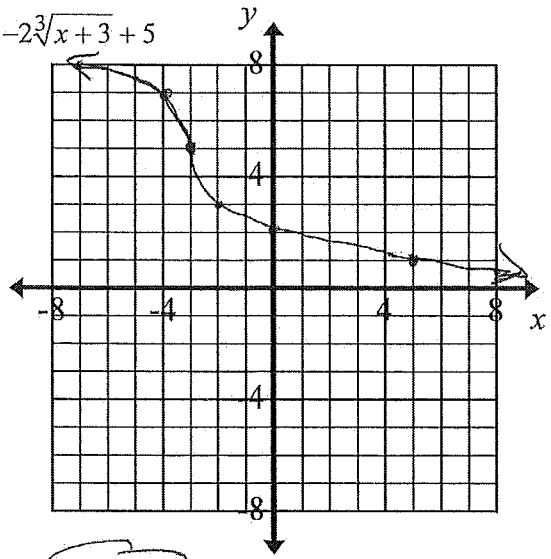


Increasing or Decreasing? (Circle one)

Domain R Range R

Point of inflection (0, 4)

7. $y = -2\sqrt[3]{x+3} + 5$



Increasing or Decreasing? (Circle one)

Domain R Range R

Point of inflection (-3, 5)

19. Write a cube root function that has the following qualities.

a) Point of inflection $(-3, 5)$ Increasing

$y = \sqrt[3]{x+3} + 5$

b) Point of inflection $(4, -6)$ Decreasing

$y = -\sqrt[3]{x-4} - 6$

c) Point of inflection $(2, 9)$ Increasing

$y = 2\sqrt[3]{x-2} + 9$