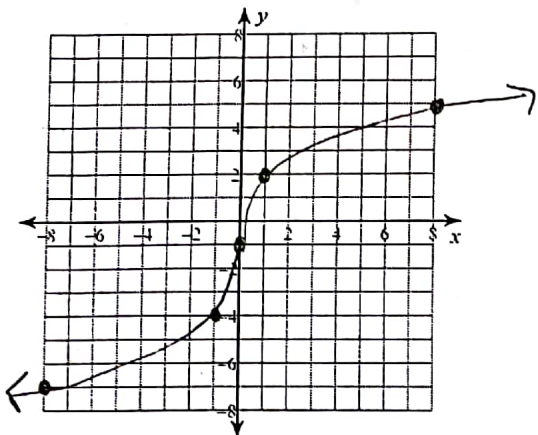


Radical Functions Review

Sketch the graph of each function. List the domain and range.

1) $y = 3\sqrt[3]{x} - 1$



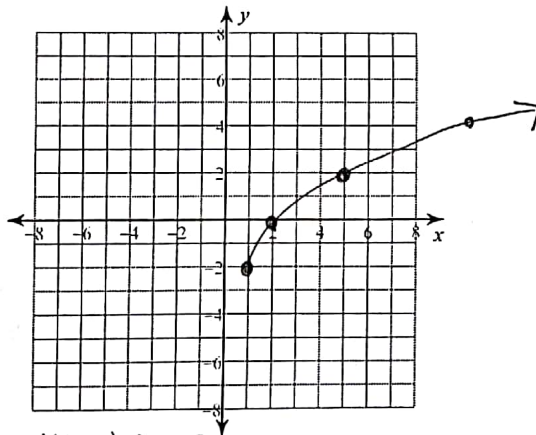
x	3y-1
-8	-7
-1	-4
0	-1
1	2
8	5

D: \mathbb{R}

R: \mathbb{R}

- v. stretch by 3
- down 1

2) $y = 2\sqrt{x-1} - 2$



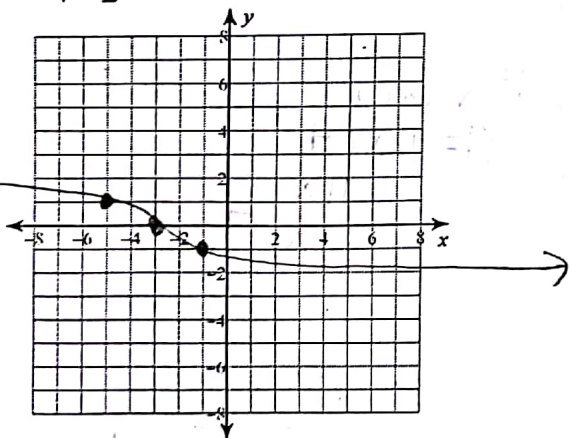
x+1	2y-2
1	-2
2	0
5	2
10	4

D: $x \geq 1$

R: $y \geq -2$

- v. stretch by 2
- right 1
- down 2

3) $y = \sqrt[3]{-\frac{1}{2}(x+3)}$



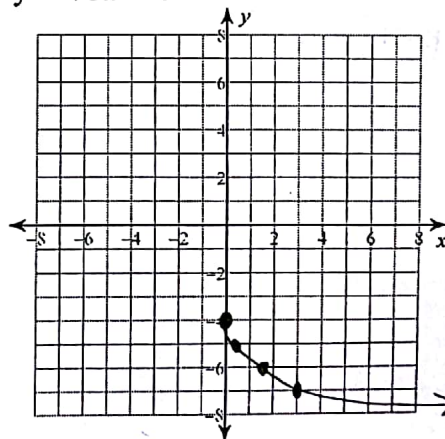
-2x-3	y
13	-2
-1	-1
-3	0
-5	1
-19	2

D: \mathbb{R}

R: \mathbb{R}

- reflect over y-axis
- h. stretch by 2
- left 3

4) $y = -\sqrt{3x-4}$



1/3x	-y-4
0	-4
.3	-5
1.3	-6
3	-7

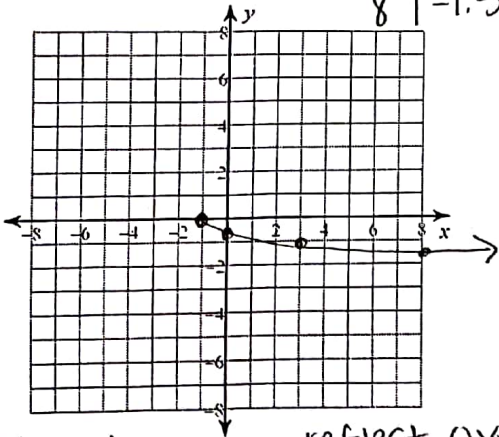
D: $x \geq 0$

R: $y \leq -4$

- reflect across x-axis
- h. shrink by 1/3
- down 4

$$5) y \geq -\frac{1}{2}\sqrt{x+1}$$

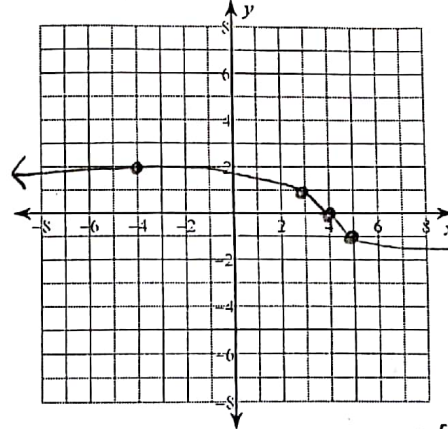
$x-1$	$-\frac{1}{2}y$
-1	0
0	$-\frac{1}{2}$
3	-1
8	-1.5



D: $x \geq -1$
R: $y \leq 0$

- reflect over x-axis
- v. shrink by $\frac{1}{2}$
- left 1

$$6) y \leq \sqrt[3]{-(x-4)}$$



$-x+4$	y
12	-2
5	-1
4	0
3	1
-4	2

D: \mathbb{R}
R: \mathbb{R}

- reflect over y-axis
- right 4

Solve each equation or inequality. Remember to check for extraneous solutions.

$$7) 10\sqrt{a-8} = 10$$

$$\sqrt{a-8} = 1$$

$$a-8 = 1$$

$$a = 9$$

$$9) \sqrt{7k} = \sqrt{8k-1}$$

$$7k = 8k-1$$

$$-k = -1$$

$$k = 1$$

$$11) 7^2 = \sqrt{x+4}^2$$

$$14 = x+4$$

$$x = 10$$

$$8) 9^2 = \sqrt{-1-82m}^2$$

$$81 = -1-82m$$

$$82 = -82m$$

$$m = -1$$

$$10) \sqrt{p+10} = \sqrt{2p+15}$$

$$p+10 = 2p+15$$

$$-5 = p$$

$$12) 0 = \sqrt{11x+4-9}$$

$$9 = \sqrt{11x+4}^2$$

$$81 = 11x+4$$

$$77 = 11x$$

$$x = 7$$

Write the radical function given the following:

- 13) The parent function $f(x) = \sqrt{x}$ vertically compressed by $\frac{1}{3}$, translated left 4, and up 2.

$$f(x) = \frac{1}{3}\sqrt{x+4} + 2$$

- 14) The parent function $f(x) = \sqrt[3]{x}$ reflected across the x-axis, horizontally stretched by 4, and translated down 1.

$$f(x) = -\sqrt[3]{\frac{1}{4}x} - 1$$

- 15) The parent function $f(x) = \sqrt{x}$ reflected over the y-axis, horizontally compressed by $\frac{1}{2}$, and translated right 3.

$$f(x) = \sqrt{-2(x-3)}$$