

Solving Radical Equations

1. $\sqrt{4x+8}+9=11$

Mar 17-10:47 AM

2. $\sqrt{5x-7} = \sqrt{6x+2}$

Mar 17-10:55 AM

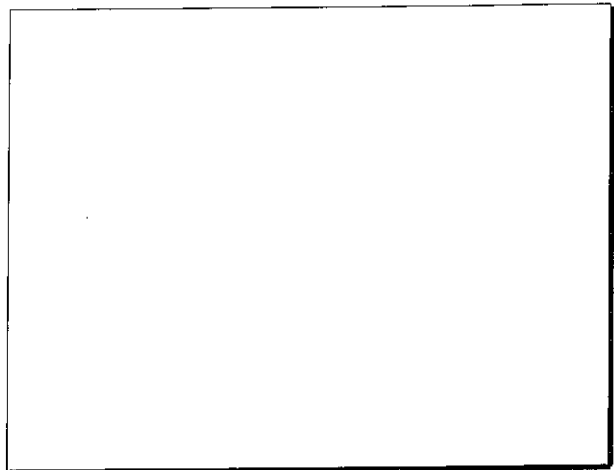
3. $x - x\sqrt{7} = 3$

Mar 17-10:54 AM

4. $-2\sqrt{9x+5} - 9 = -21$

Mar 17-10:56 AM

5. $\sqrt{x-1}+4=3$



Mar 17-10:57 AM

Mar 17-10:59 AM

Solve each equation. Be sure to check for extraneous solutions.

1. $1 + x\sqrt{2} = 0$

2. $6 + 2x\sqrt{3} = 0$

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

4. $x - x\sqrt{5} = 2$

5. $\sqrt{x-4} - 3 = 0$

6. $\sqrt{x-5} - 7 = 0$

7. $\sqrt[3]{x+1} = 2$

8. $\sqrt[3]{x-1} = 3$

9. $\sqrt[4]{3x} - 2 = 0$

10. $\sqrt[4]{4x} = 3$

11. $\sqrt{2x+3} - 7 = 0$

12. $\sqrt{3x-5} - 3 = 1$

13. $\sqrt{4x+8} + 9 = 11$

14. $\sqrt{1+2x} - 6 = -3$

15. $\sqrt{5x+1} + 6 = 10$

16. $\sqrt[4]{2x+3} + 5 = 4$

17. $\sqrt{3x+1} - 2 = 6$

18. $\sqrt[3]{x+5} + 6 = 4$

Answers:

1) $-\frac{\sqrt{2}}{2}$ 2) $-\sqrt{3}$ 3) $\frac{12-4\sqrt{2}}{7}$ 4) $\frac{-1-\sqrt{5}}{2}$ 5) 13 6) 54 7) 7 8) 28

9) $\frac{16}{3}$ 10) $\frac{81}{4}$ 11) 23 12) 7 13) -1 14) 4 15) 3 16) \emptyset 17) 21 18) -13

Solve each equation. Be sure to check for extraneous solutions.

1. $x + 3 = x\sqrt{2}$

2. $4x - \sqrt{2} = x\sqrt{3} + 2\sqrt{2}$

3. $5 - \sqrt{3x + 4} = 0$

4. $\sqrt[3]{5x + 4} - 4 = 0$

5. $\sqrt{3x - 2} = 5$

6. $\sqrt[3]{4x + 9} = 5$

7. $18 - 3x = x\sqrt{2}$

8. $\sqrt{x + 8} - 5 = 0$

9. $\sqrt[3]{x - 7} = 4$

10. $\sqrt[3]{3x - 2} = 0$

11. $\sqrt[4]{8x - 5} - 1 = 2$

12. $\sqrt{1 - 4x} - 8 = -6$

13. $\sqrt[4]{7x - 2} + 12 = 7$

14. $\sqrt[3]{6x - 5} + 2 = -3$

15. $\sqrt{6x - 4} = \sqrt{2x + 10}$

16. $\sqrt{9x - 4} = \sqrt{7x - 20}$

Answers:

- 1) $3 + 3\sqrt{2}$ 2) $\frac{12\sqrt{2} + 3\sqrt{6}}{13}$ 3) 7 4) 12 5) 9 6) 29 7) $\frac{54 + 18\sqrt{2}}{7}$ 8) 17
9) 71 10) $\frac{8}{3}$ 11) $\frac{43}{4}$ 12) $-\frac{3}{4}$ 13) \emptyset 14) -20 15) $\frac{7}{2}$ 16) -8

Graphing Radical Inequalities

1. Solve the inequality
2. Set the radicand ≥ 0 , then solve
3. Graph #1 & #2 on a number line
4. Look at where shading is in common
5. Write as interval notation

1. $\sqrt{x+2} \leq 4$

Mar 17-1:02 PM

Mar 17-11:02 AM

2. $\sqrt{5x-16} < \sqrt{2x-4}$

Mar 17-11:04 AM

3. $-\sqrt{5x+13} \leq -2$

Mar 17-11:06 AM

Algebra II
Solving Radical Inequalities

Name: _____

1) $\sqrt{x-5}+7 < 12$

2. $-\sqrt{5x+13} \geq 2$

3. $\sqrt{5x-16} > \sqrt{2x-4}$

4. $\sqrt{2x+2}+1 \geq 5$

5. $3+\sqrt{5x-10} \leq 8$

6. $4 > \sqrt{4x-4}-2$

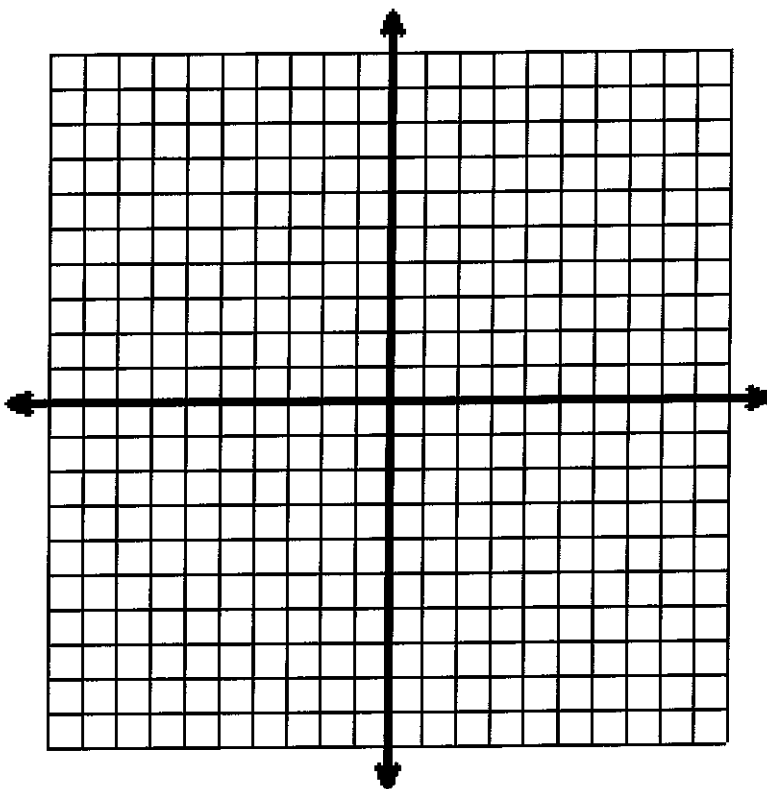
7. $4 > \sqrt{4x-4}-2$

8. $-\sqrt{6x-5} > 3$

Graphic Organizer: RADICAL FUNCTION

Parent Function: $f(x) = \sqrt{x}$

$f(x) = \sqrt{x}$	
x	f(x)
-2	
-1	
0	
1	
2	
4	
9	



Describe:

x – intercepts (zeros)

Domain:

Range:

y - intercept

Intervals of Increase/Decrease

End Behavior

Max or Min

Graphing Radicals

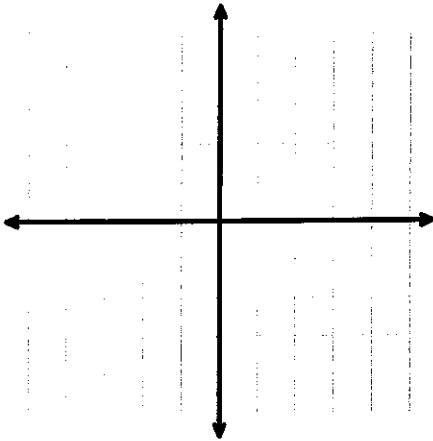
Name: _____

Fill in the missing information:

$$f(x) = \sqrt{x-1} + 2$$

1) Make a table of values (x = -3, -2, -1, 0, 1, 2, 3)

2) Graph the points



3) x-intercept(s) _____, y-intercept(s) _____

4) Domain: _____ Range: _____

5) Interval of increase: _____ (x-values only)

6) Interval of decrease: _____ (x-values only)

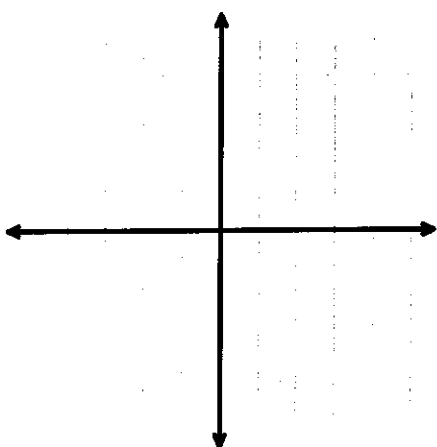
7) End behavior: (what is happening at the arrows)

8) Maximum or minimum point: (just one point)
Fill in the missing information:

$$f(x) = \sqrt{x+3} - 5$$

1) Make a table of values ($x = -3, -2, -1, 0, 1, 2, 3$)

3) Graph the points



3) x-intercept(s) _____, y-intercept(s) _____

4) Domain: _____ Range: _____

6) Interval of increase: _____ (x-values only)

6) Interval of decrease: _____ (x-values only)

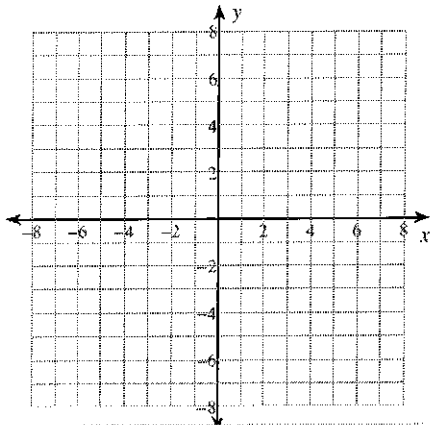
7) End behavior: (what is happening at the arrows)

8) Maximum or minimum point: (just one point)

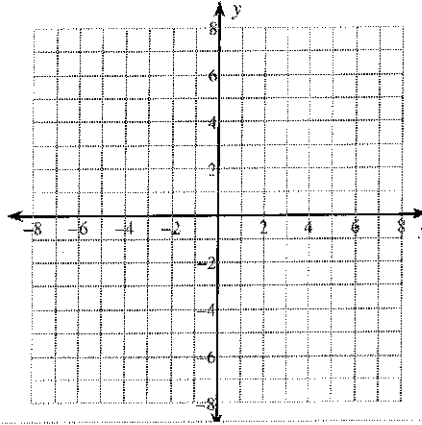
Graphing Radical Functions WS1

Graph the following radical functions equations. List the Domain and Range in interval notation.

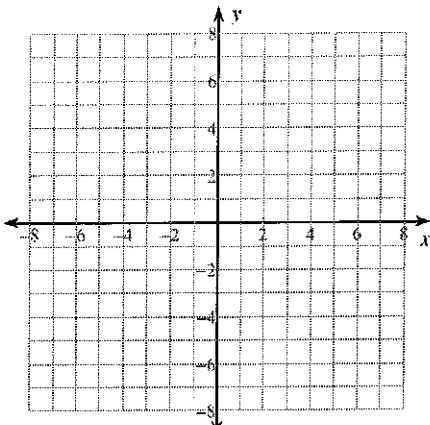
1. $f(x) = 2\sqrt{x-3} + 2$



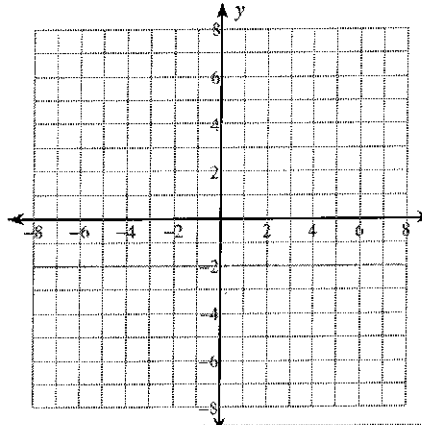
2. $f(x) = -\sqrt{2x+2} - 2$



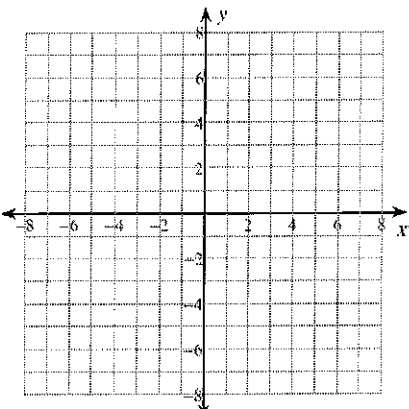
3. $f(x) = -\frac{1}{3}\sqrt{x-4}$



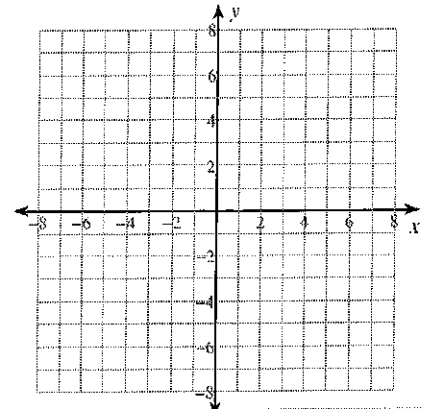
4. $f(x) = \sqrt{x+1} - 3$



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



6. $f(x) = -\sqrt{x}$



Graphing Cube Root Functions

The Cube Root Function

1. What is the parent equation for the Cube Root Function? _____

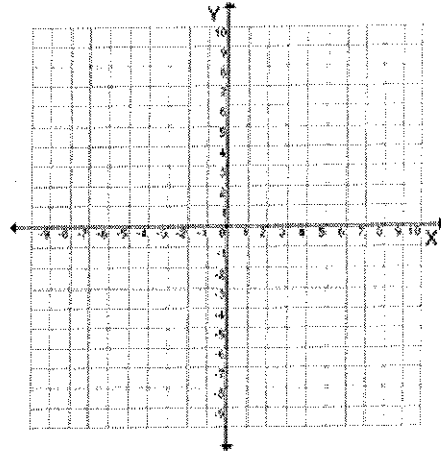
2. Graph the parent function for Cube Root.

3. Domain: _____

Range: _____

4. X-intercept: _____

y-intercept: _____



5. What are the coordinates for the 3 major points: _____, _____, _____

6. Based on your knowledge of parameter changes, describe the roles a, h, and k play for the family of functions $y = a\sqrt[3]{x-h} + k$. (i.e what does a do, what does h do, what does k do, and so on.....)

a: _____

h: _____

k: _____

7. How would each of the following graphs change in relation to the parent graph?

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

b) $y = \sqrt[3]{x+4}$ _____

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

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

e) $y = \sqrt[3]{x} - 6$ _____

f) $y = 3\sqrt[3]{x-2} + 7$ _____

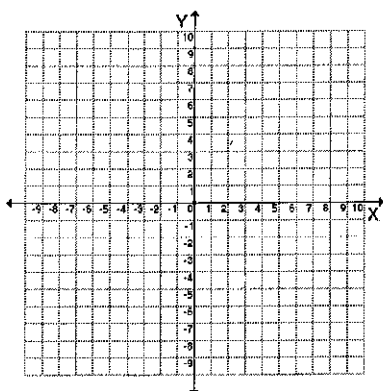
Graphing Cube Root Functions

8. State the Domain and Range of each function.

	Domain	Range
a) $y = 5\sqrt[3]{x}$	_____	_____
b) $y = \sqrt[3]{x+8}$	_____	_____
c) $y = -\sqrt[3]{x-7}$	_____	_____
d) $y = \sqrt[3]{x+2} - 3$	_____	_____
e) $y = -\sqrt[3]{x-4} + 1$	_____	_____

9. Graph the following cube root functions using parameter changes.

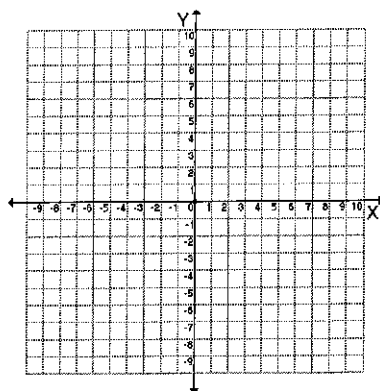
a) $y = -\sqrt[3]{x}$



Domain: _____

Range: _____

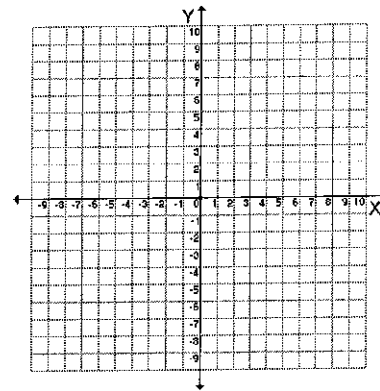
b) $y = 3\sqrt[3]{x+5}$



Domain: _____

Range: _____

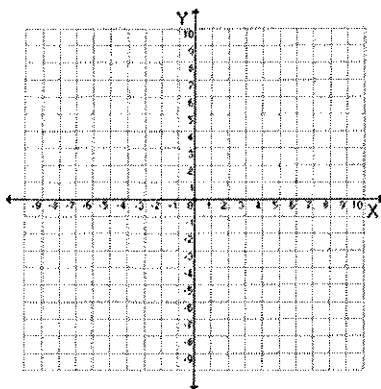
c) $y = \sqrt[3]{x} - 2$



Domain: _____

Range: _____

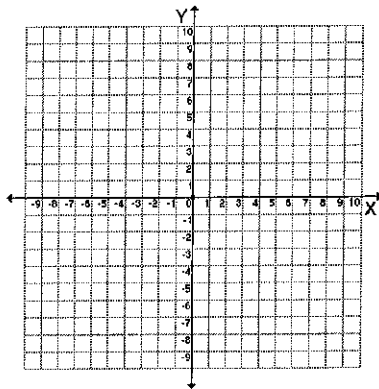
d) $y = -\sqrt[3]{x+3}$



Domain: _____

Range: _____

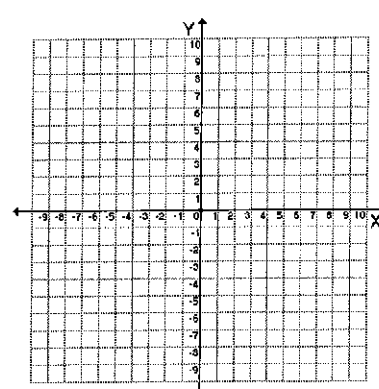
e) $y = \sqrt[3]{x+2} + 5$



Domain: _____

Range: _____

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

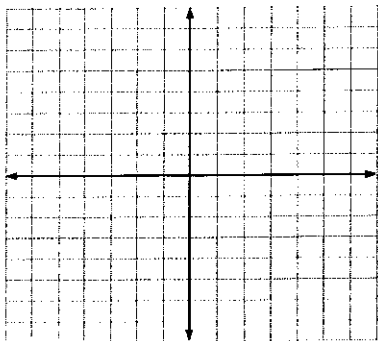


Domain: _____

Range: _____

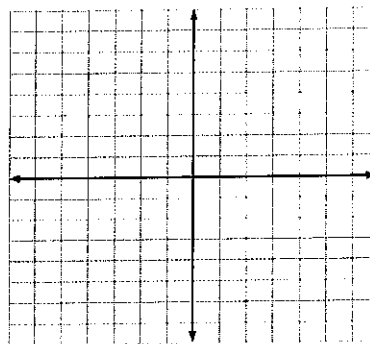
Graph the following radical functions. List the Domain and Range in interval notation.

1. $f(x) = \sqrt[3]{x-2} + 4$



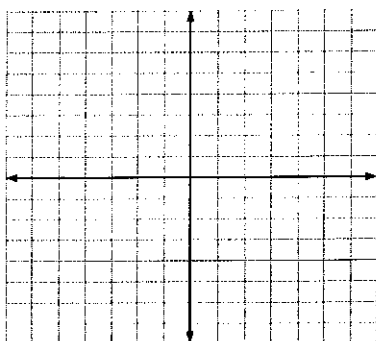
domain: _____
range: _____

2. $f(x) = -2\sqrt{x+1} - 3$



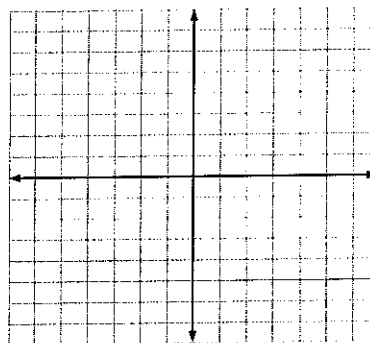
domain: _____
range: _____

3. $f(x) = \sqrt{3x-6}$



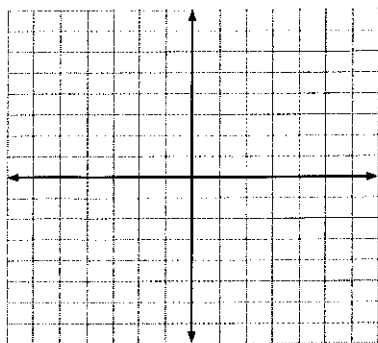
domain: _____
range: _____

4. $f(x) = 2\sqrt[3]{x} - 3$



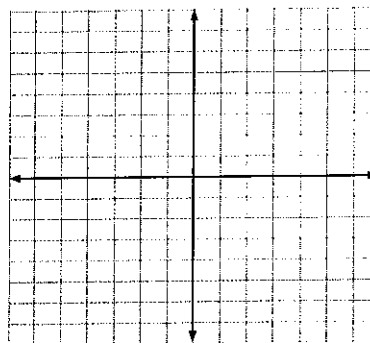
domain: _____
range: _____

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



domain: _____
range: _____

6. $f(x) = \sqrt{\frac{1}{2}x+1} - 3$



domain: _____
range: _____

Graph. Find the domain and range.

1. $f(x) = -3\sqrt{x-1} + 2$

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

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

4. $f(x) = \frac{1}{2}\sqrt{x} - 1$

5. $f(x) = 2\sqrt[3]{x+1} + 1$

6. $f(x) = \sqrt[3]{x-1} + 1$

Solve the following radical equations.

7. $3\sqrt{x-5} = 20$

8. $x + x\sqrt{2} = 5$

9. $\sqrt[3]{x-4} - 2 = 3$

10. $\sqrt{2x-3} = x-3$

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

12. $\sqrt[4]{x+\frac{1}{2}} + 1 = -1$

Solve the radical inequalities.

13. $\sqrt{2x-3} > \sqrt{4x-1}$

14. $-4\sqrt{3x+1} \geq -12$

15. $-4\sqrt{3x-1} \geq 3$

16. $\sqrt{2x-4} > 2$

17. $2\sqrt{2x-3} > 4$

18. $\sqrt{\frac{x}{3}} > 1$

Answers:

1) $D[1, \infty)$; $R(-\infty, 2]$ 2) $D(-\infty, \infty)$; $R(-\infty, \infty)$ 3) $D[1, \infty)$; $R[-3, \infty)$ 4) $D[0, \infty)$; $R[-1, \infty)$

5) $D(-\infty, \infty)$; $R(-\infty, \infty)$ 6) $D(-\infty, \infty)$; $R(-\infty, \infty)$ 7) $x = \frac{445}{9}$ 8) $x = -5 + 5\sqrt{2}$ 9) $x = 129$

10) $x = 6$ 11) $x = -23$ 12) \emptyset 13) \emptyset 14) $\left[-\frac{1}{3}, \frac{8}{3}\right]$ 15) \emptyset 16) $(4, \infty)$ 17) $\left(\frac{7}{2}, \infty\right)$

18) $(3, \infty)$