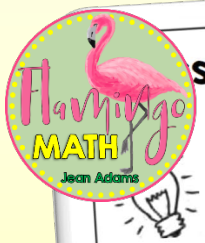


Algebra 2 Honors

Graphing Radical Functions



Lesson 8: Graphing Radical Functions

A radical function is any function that can be written in the form $f(x) = a\sqrt[n]{x-h} + k$, where $a \neq 0$. For **even** values of n , the domain of a radical function is the real numbers $x \geq h$. This function can also be known as a **square root function**.

Example:

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

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

Families of Radical Functions

	Square Root	Radical
Parent Function	$y = \sqrt{x}$	$y = \sqrt[n]{x}$

Completely Editable

6.8

Lesson 6.8: Graphing Radical Functions



A radical function is any function that can be written in the form $f(x) = a\sqrt[n]{x-h} + k$, where $a \neq 0$. For **even** values of n , the domain of a radical function is the real numbers $x \geq n$. This function can also be known as a **square root function**.

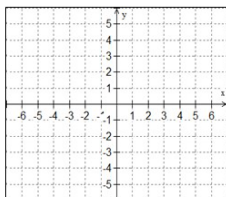
Example:

Families of Radical Functions

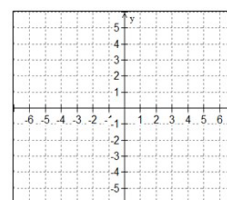
	Square Root	Radical
Parent Function		
Reflection in x -axis		
Stretch: $a > 1$ Shrink: $0 < a < 1$		
Translation Horizontal by h Vertical by k		

Vertical Translations

EX #1: Graph $y = \sqrt{x} + 2$

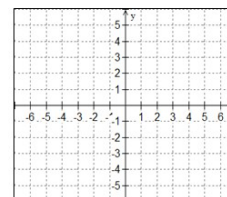


EX #2: Graph $y = \sqrt{x} - 3$

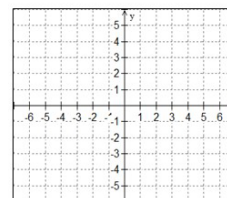


Horizontal Translations

EX #3: Graph $y = \sqrt{x-3}$

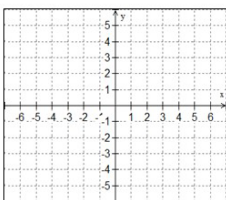


EX #4: Graph $y = \sqrt{x+2}$

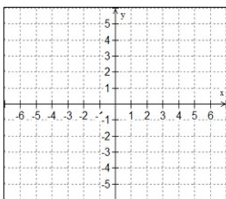


Graphing a Square Root Function

EX #5: $y = 2\sqrt{x+3} - 1$



EX #6: $y = -\frac{1}{2}\sqrt{x-1} + 4$

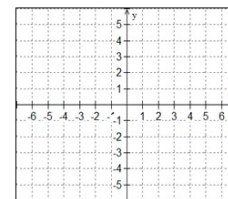


Solving a Radical Equation by Graphing

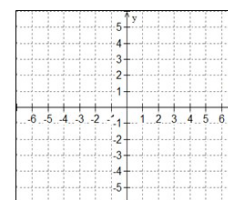
EX #7: The population of Corpus Christi, Texas, between 1970 and 2005 can be modeled by the function $P(x) = 75,000 \sqrt[3]{x-1950}$, where x represents the year. In what year was the population of Corpus Christi 275,000?

Graphing a Cube Root Function

EX #8: Graph $y = \sqrt[3]{x-2}$



EX #9: Graph $y = 1 - \frac{1}{2}\sqrt[3]{x+3}$



Rewriting a Radical Function

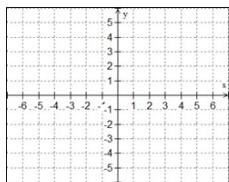
EX #10: How can you rewrite $y = \sqrt[3]{8x+32} - 2$ so you can graph it using transformations? Describe the graph. Then, sketch the graph. Check your results with a calculator.

NOTES

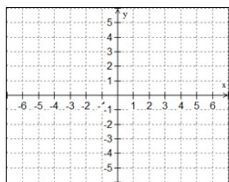
Graphing Radical Functions Practice

Problems 1–8, graph each function.

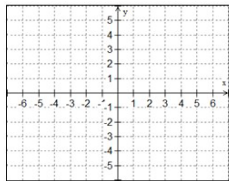
1. $y = \sqrt{x+3}$



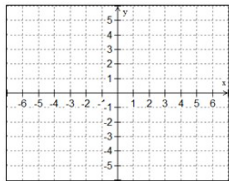
2. $y = 2 - \sqrt{x}$



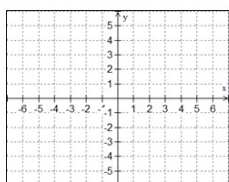
3. $y = \sqrt{x+1} - 3$



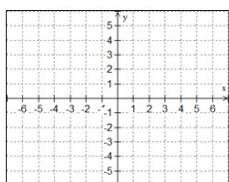
4. $y = 5 - \sqrt{x+2}$



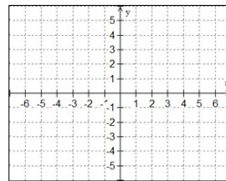
5. $y = \frac{1}{2}\sqrt{x} - 4$



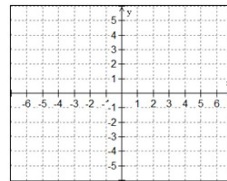
6. $y = 2\sqrt{x+3}$



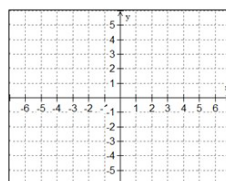
7. $y = \sqrt[3]{x+1}$



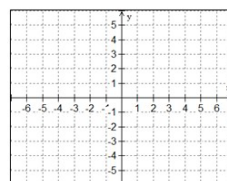
8. $y = \sqrt[3]{x+2} - 3$



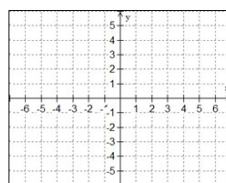
9. $y = -\sqrt[3]{x} + 3$



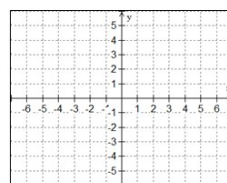
10. $y = 2\sqrt[3]{x-1} - 3$



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



12. $y = -2\sqrt[3]{2-x}$



Problems 13–15, solve.

13. The greatest distance, d , in miles, that can be seen from the periscope of a submarine on a clear day is given by $d = \sqrt{\frac{3h}{2}}$, where h is the height, in feet, above the surface of the water.

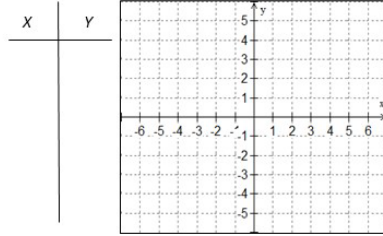
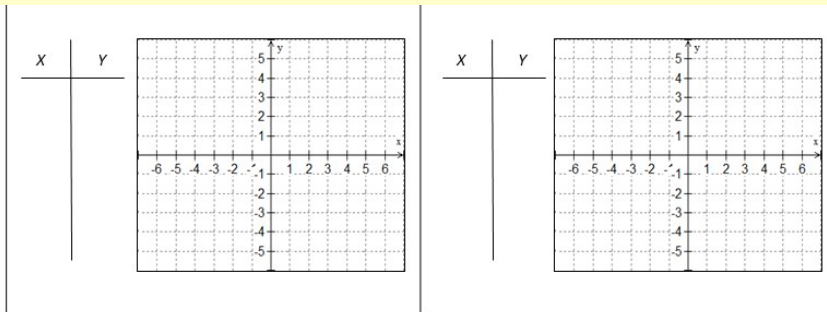
A. If a ship is 4 miles from the submarine, at what height above the water would the submarine need to raise its periscope in order to see the ship?

B. If a ship is 1.5 miles from the submarine, to what height would it have to be raised?

14. A center-pivoting irrigation system is used to water crops on farms. This system can irrigate up to 130 acres of land. The length L in feet of a rotating pipe needed to irrigate A acres is modeled by $L = 117.75\sqrt{A}$. Find the length of pipe needed to irrigate a 50-acre plot of land.

Practice Sets

Lesson Warm-Ups



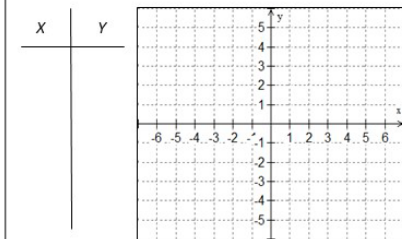
Name _____ Date _____ Period _____

Lesson 6.8: Graphing Radical Functions

Warm-Up #2

1. Graph $y = \sqrt{x} + 2$

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

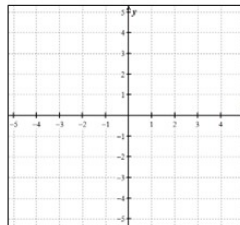


6.8 Graphing Radical Functions Form A

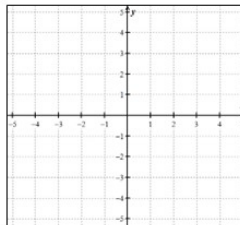
Name _____

Date _____ Period _____

1. Graph: $y = \sqrt{x - 1}$



2. Graph: $y = -\sqrt{x} - 2$



3. Graph: $y = \sqrt{x + 3} - 1$

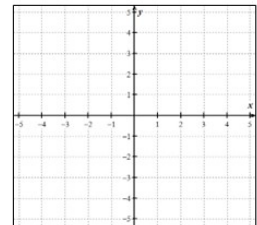


6.8 Graphing Radical Functions Form B

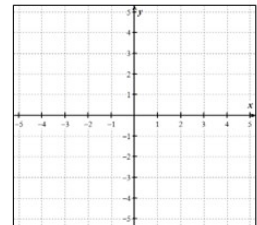
Name _____

Date _____ Period _____

1. Graph: $y = \sqrt{x + 2}$



2. Graph: $y = -\sqrt{x} + 1$



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



Daily Lesson Quiz

