

Algebra 2 Guideline for Week 4 May,11 – May,15

There are 4 Review assignments to complete this week. You can either write on binder paper or print worksheets. Make sure to

- write very neat
- show all the work
- write your name in pen

After you are done with each assignment, open it on schoology.com, take a photo and submit. **Due date for these assignments is May 15th**, but I strongly recommend completing and submitting your assignments daily.

Please, message me on schoology if you have questions and need help. Also, there are will be live Q&A meetings with me through Zoom scheduled on schoology if you need an additional help.

May,11

Assignment HMH 9.3 Practice A/B “Solving Rational Equations”

Complete assignment and submit on schoology.

Use the following resources to review:

- Notes from our class
- On-line HMH interactive lesson 9.3
- HMH 9.3 Reteach page (attached)

May,12

Assignment HMH 10.2 Practice A/B “Graphing Square Root Functions”

Complete assignment and submit on schoology.

Use the following resources to review:

- Notes from our class
- On-line HMH interactive lesson 10.2
- HMH 10.2 Reteach page (attached)

May,13

Assignment HMH 11.1 Practice A/B “Radical Expressions and Rational Exponents”

Complete assignment on paper, take a photo and submit on schoology.

Use the following resources to review:

- Notes from our class
- On-line HMH interactive lesson 11.1
- HMH 11.1 Reteach page (attached)

May,14

Assignment HMH 11.2 Practice A/B “Simplifying Radical Expressions”

Complete assignment on paper, take a photo and submit on schoology.

Use the following resources to review:

- Notes from our class
- On-line HMH interactive lesson 11.2
- HMH 11.2 Reteach page (attached)

May,15

Today is due date for all the assignments from week 3 and 4.

Make sure to turn in your assignments.

LESSON
9-3**Solving Rational Equations****Reteach**

Rational equations can be solved algebraically by multiplying through by the LCD.

Example Solve the rational equation algebraically. $\frac{x}{x-2} + \frac{1}{x-4} = \frac{2}{x^2 - 6x + 8}$

Multiply by LCD
 $(x-2)(x-4)$

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

Factor the
denominator

$$\frac{2}{(x-2)(x-4)}$$

Step 1 Multiply each term by the LCD.

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

Step 2 Cancel common factors.

$$\frac{\cancel{x}}{\cancel{x-2}}(\cancel{x-2})(x-4) + \frac{1}{\cancel{x-4}}(x-2)(\cancel{x-4}) = \frac{2}{(\cancel{x-2})(\cancel{x-4})}(\cancel{x-2})(\cancel{x-4})$$

$$x(x-4) + (x-2) = 2$$

$$x^2 - 4x + x - 2 = 2$$

$$x^2 - 3x - 4 = 0$$

$$(x-4)(x+1) = 0$$

Step 3 Simplify and solve the remaining equation.

$$x = 4 \text{ or } x = -1$$

Step 4 Check for extraneous solutions that are excluded values.

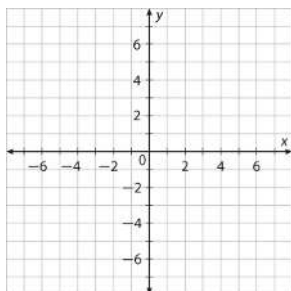
$x = 4$ is an excluded value.

$x = -1$ is the solution.

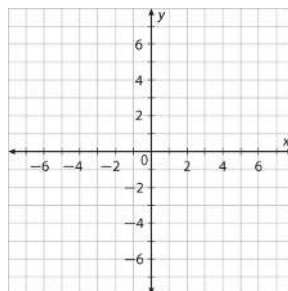
LESSON
9-3**Solving Rational Equations****Practice and Problem Solving: A/B**

Identify any excluded values. Rewrite the equation with 0 on one side.
Then graph to find the solution.

1. $-\frac{2}{x-3} = 2$



2. $\frac{4}{x-2} = -2$



Find the LCD for each pair.

3. $\frac{13}{4x}$ and $\frac{27}{3x^2}$

4. $\frac{11}{x^2 + 3x + 2}$ and $\frac{1}{x + 2}$

Solve each equation algebraically.

5. $\frac{1}{x} - \frac{x-2}{3x} = \frac{4}{3x}$

6. $\frac{5x-5}{x^2-4x} - \frac{5}{x^2-4x} = \frac{1}{x}$

7. $\frac{x^2-7x+10}{x} + \frac{1}{x} = x+4$

8. $\frac{4}{x^2-4} = \frac{1}{x-2}$

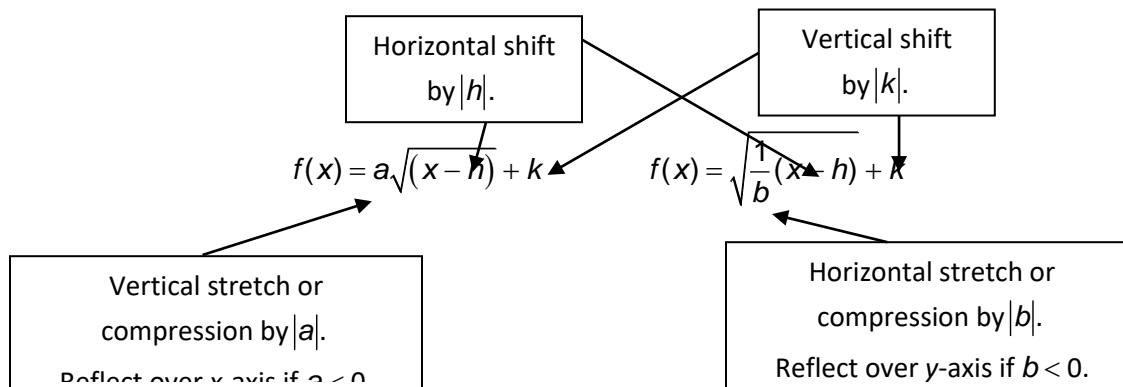
Solve.

9. The time required to deliver and install a computer at a customer's location is $t = 4 + \frac{d}{r}$, where t is time in hours, d is the distance, in miles, from the warehouse to the customer's location, and r is the average speed of the delivery truck. If it takes 6.2 hours for the employee to deliver and install a computer for a customer located 100 miles from the warehouse, what is the average speed of the delivery truck?

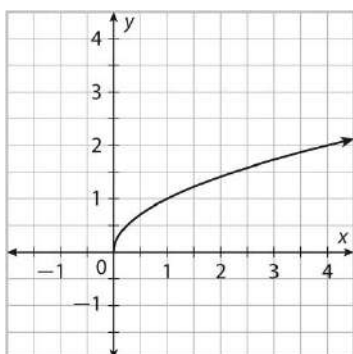
LESSON
10-2

Graphing Square Root Functions

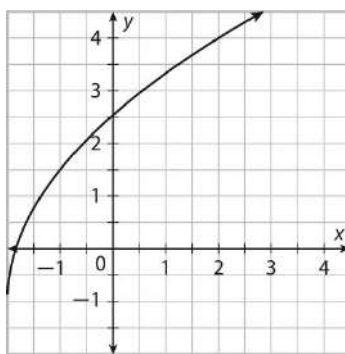
Reteach



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

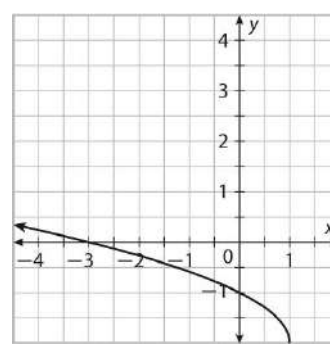


$$g(x) = 2.5\sqrt{x+2} - 1$$



Vertical stretch by 2.5
Horizontal shift left 2 units
Vertical shift down 1 unit

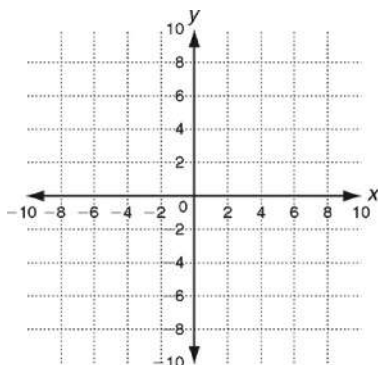
$$g(x) = \sqrt{-(x-1)} - 2$$



Reflect across y-axis
Horizontal shift right 1 unit
Vertical shift down 2 units

LESSON
10-2**Graphing Square Root Functions****Practice and Problem Solving: A/B****Graph each function, and identify its domain and range.**

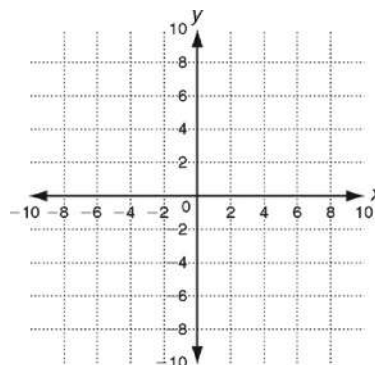
1. $f(x) = \sqrt{x - 4}$



Domain: _____

Range: _____

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



Domain: _____

Range: _____

Using the graph of $f(x) = \sqrt{x}$ as a guide, describe the transformation.

3. $g(x) = 4\sqrt{x + 8}$ _____

4. $g(x) = -\sqrt{3x} + 2$ _____

Use the description to write the square root function g .

5. The parent function $f(x) = \sqrt{x}$ is reflected across the y-axis, vertically stretched by a factor of 7, and translated 3 units down. _____

6. The parent function $f(x) = \sqrt{x}$ is translated 2 units right, compressed horizontally by a factor of $\frac{1}{2}$, and reflected across the x-axis. _____

Solve.

7. The radius, r , of a cylinder can be found using the function $r = \sqrt{\frac{V}{\pi h}}$, where

V is the volume and h is the height of the cylinder.

- a. Find the radius of a cylinder with a volume of 200 cubic inches and a height of 4 inches. Use $\pi = 3.14$. Round to the nearest hundredth. _____
- b. The volume of a cylinder is doubled without changing its height. How did its radius change? Explain your reasoning. _____

LESSON
11-1**Radical Expressions and Rational Exponents****Reteach**

Numerator → Power

$$a^{\frac{m}{n}} = \sqrt[n]{a^m}$$

Denominator → Index

Translate the expressions with rational exponents into radical expressions, then simplify.

Example $625^{\frac{3}{4}} = \left(\sqrt[4]{625}\right)^3 = 5^3 = 125$

Example $(-243)^{\frac{2}{5}} = \left(\sqrt[5]{-243}\right)^2 = (-3)^2 = 9$

Translate the radical expressions into expressions with rational exponents, then simplify.

Example $\sqrt[4]{4^2} = 4^{\frac{2}{4}} = 4^{\frac{1}{2}} = 2$

Example $\sqrt[3]{6^9} = 6^{\frac{9}{3}} = 6^3 = 216$

LESSON
11-1**Radical Expressions and Rational Exponents****Practice and Problem Solving: A/B**

Write each expression in radical form. Simplify numerical expressions when possible.

1. $64^{\frac{5}{6}}$

2. $(6x)^{\frac{3}{2}}$

3. $(-8)^{\frac{4}{3}}$

4. $(5r^3)^{\frac{1}{4}}$

5. $27^{\frac{2}{3}}$

6. $(100a)^{\frac{1}{2}}$

7. $10^{\frac{8}{5}}$

8. $(x^2)^{\frac{2}{5}}$

9. $(7x)^{-\frac{1}{3}}$

Write each expression by using rational exponents. Simplify numerical expressions when possible.

10. $(\sqrt[4]{2})^7$

11. $(\sqrt{5x})^3$

12. $\sqrt[5]{51^4}$

13. $(\sqrt{169})^3$

14. $(\sqrt[4]{2v})^3$

15. $(\sqrt[5]{n^2})^2$

16. $\frac{1}{(\sqrt{3m})^3}$

17. $\sqrt[7]{36^{14}}$

18. $\frac{1}{(\sqrt[4]{5p})^7}$

Solve.

19. In every atom, electrons orbit the nucleus with a certain characteristic

velocity known as the Fermi-Thomas velocity, equal to $\frac{Z^{\frac{2}{3}}}{137}c$, where Z

is the number of protons in the nucleus and c is the speed of light. In terms of c , what is the characteristic Fermi-Thomas velocity of the electrons in Uranium, for which $Z = 92$?

LESSON
11-2**Simplifying Radical Expressions****Reteach**

Rational exponents are subject to the same properties as integer exponents.

Product of
Powers

$$a^m \cdot a^n = a^{m+n}$$

Quotient of
Powers

$$\frac{a^m}{a^n} = a^{m-n}$$

Power of a
Power

$$(a^m)^n = a^{m \cdot n}$$

Power of a
Product

$$(ab)^m = a^m b^m$$

Power of a
Quotient

$$\left(\frac{a}{b}\right)^m = \frac{a^m}{b^m}$$

Negative
Exponent

$$a^{-m} = \frac{1}{a^m}$$

Example Simplify the expressions. Assume all variables are positive.

$$\left(4x^{\frac{1}{3}}\right)^{\frac{3}{2}}$$

Power of a
Product

$$\left(4x^{\frac{1}{3}}\right)^{\frac{3}{2}} = 4^{\frac{3}{2}} \left(x^{\frac{1}{3}}\right)^{\frac{3}{2}}$$

Power of a
Power

$$= 8 \left(x^{\frac{1}{3} \cdot \frac{3}{2}}\right)$$

Simplify.

$$= 8x^{\frac{1}{2}}$$

Quotient of
Powers

Power of a
Product

Simplify.

$$\left(\frac{5y^{\frac{3}{4}}}{y^{\frac{1}{4}}}\right)^2$$

$$\left(\frac{5y^{\frac{3}{4}}}{y^{\frac{1}{4}}}\right)^2 = \left(5y^{\left(\frac{3}{4} - \frac{1}{4}\right)}\right)^2 = \left(5y^{\frac{2}{4}}\right)^2 = \left(5y^{\frac{1}{2}}\right)^2$$

$$= 5^2 \left(y^{\frac{1}{2}}\right)^2$$

$$= 25y^{\frac{1}{2} \cdot 2} = 25y$$

LESSON
11-2**Simplifying Radical Expressions****Practice and Problem Solving: A/B**

Simplify each expression. Assume all variables are positive.

1. $-3\sqrt{12r}$

2. $4^{\frac{3}{2}} \cdot 4^{\frac{5}{2}}$

3. $\frac{27^{\frac{4}{3}}}{27^{\frac{2}{3}}}$

4. $\frac{(a^2)^2}{a^{\frac{3}{2}}b^{\frac{1}{2}} \cdot b}$

5. $(27 \cdot 64)^{\frac{2}{3}}$

6. $\left(\frac{1}{243}\right)^{\frac{1}{5}}$

7. $\frac{(25x)^{\frac{3}{2}}}{5x^{\frac{1}{2}}}$

8. $(4x)^{-\frac{1}{2}} \cdot (9x)^{\frac{1}{2}}$

9. $3\sqrt[3]{81x^4y^2}$

10. $-5\sqrt[3]{-500x^5y^3}$

Solve.

11. The frequency, f , in Hz, at which a simple pendulum rocks back and forth is given by $f = \frac{1}{2\pi} \sqrt{\frac{g}{l}}$, where g is the strength of the gravitational field at the location of the pendulum, and l is the length of the pendulum.

- a. Rewrite the formula so that it gives the length l of the pendulum in terms of g and f . Then simplify the formula using the fact that the gravitational field is approximately 32 ft/s^2 .

- b. Use the equation found in part a to find the length of a pendulum, to the nearest foot, that has a frequency of 0.52 Hz.
