# 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.**

Name ______________________________ Date ________________ Class ________________

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. $\dfrac{x}{x-2}+\dfrac{1}{x-4}=\dfrac{2}{x^2-6x+8}$

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

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

Factor the denominator $\dfrac{2}{(x-2)(x-4)}$

**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.

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

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

**Step 3** Simplify and solve the remaining equation.

$$x^2-4x+x-2=2$$
$$x^2-3x-4=0$$
$$(x-4)(x+1)=0$$
$$x=4 \text{ or } x=-1$$

**Step 4** Check for extraneous solutions that are excluded values.

$x=4$ is an excluded value.
$x=-1$ is the solution.

Name ______________________________ Date ______________ Class______________

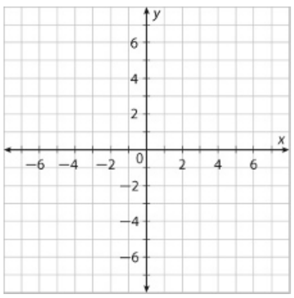
LESSON 9-3

# Solving Rational Equations

## *Practice and Problem Solving: A/B*

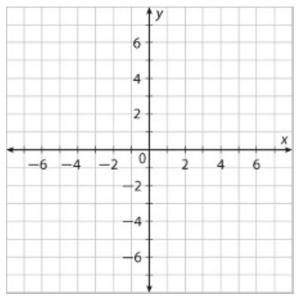
**Identify any excluded values. Rewrite the equation with 0 on one side. Then graph to find the solution.**

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



______________________________

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



______________________________

**Find the LCD for each pair.**

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

______________________________

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

______________________________

**Solve each equation algebraically.**

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

______________________________

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

______________________________

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

______________________________

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

______________________________

**Solve.**

9. The time required to deliver and install a computer at a customer's location is $t=4+\dfrac{d}{r}$, 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?

______________________________

Name ________________________________________ Date ___________________ Class___________________

LESSON **10-2**

# Graphing Square Root Functions

## *Reteach*

Horizontal shift by $|h|$.

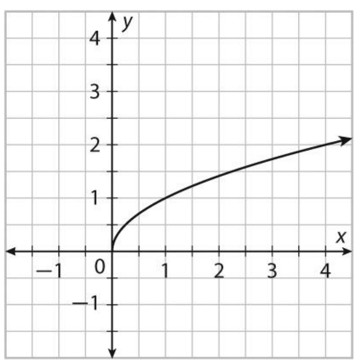
Vertical shift by $|k|$.

$$f(x) = a\sqrt{(x-h)} + k \qquad f(x) = \sqrt{\frac{1}{b}(x-h)} + k$$

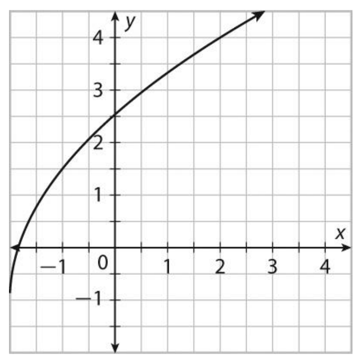
Vertical stretch or compression by $|a|$.
Reflect over *x*-axis if $a < 0$.

Horizontal stretch or compression by $|b|$.
Reflect over *y*-axis if $b < 0$.

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

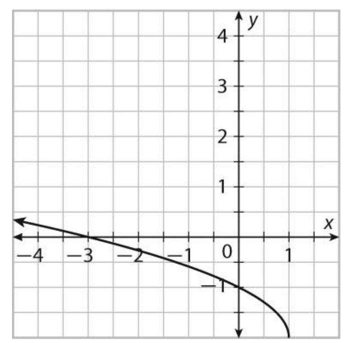



$g(x) = 2.5\sqrt{x+2} - 1$




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

Name ______________________ Date ______________ Class ______________

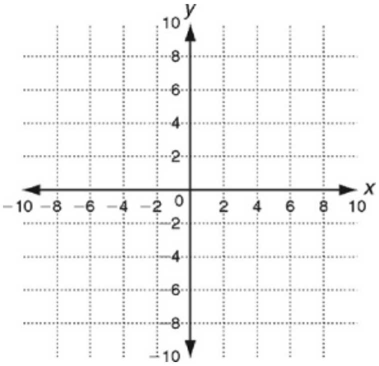
LESSON 10-2

# Graphing Square Root Functions

## *Practice and Problem Solving: A/B*

**Graph each function, and identify its domain and range.**

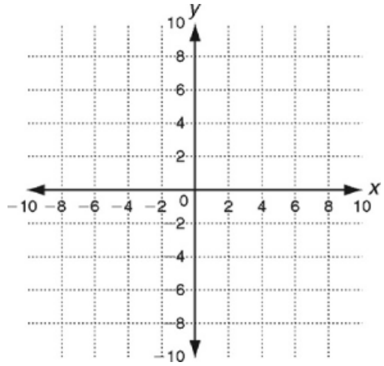
1. $f(x) = \sqrt{x-4}$



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. ______________

Name ______________________ Date ______________ Class ______________

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

Name ______________________ Date ______________ Class______________

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. $\left(\sqrt[4]{2}\right)^7$ ________________
11. $\left(\sqrt{5x}\right)^3$ ________________
12. $\sqrt[5]{51^4}$ ________________
13. $\left(\sqrt{169}\right)^3$ ________________
14. $\left(\sqrt[4]{2v}\right)^3$ ________________
15. $\left(\sqrt[5]{n^2}\right)^2$ ________________
16. $\dfrac{1}{\left(\sqrt{3m}\right)^3}$ ________________
17. $\sqrt[7]{36^{14}}$ ________________
18. $\dfrac{1}{\left(\sqrt[4]{5p}\right)^7}$ ________________

**Solve.**

19. In every atom, electrons orbit the nucleus with a certain characteristic velocity known as the Fermi-Thomas velocity, equal to $\dfrac{Z^{\frac{2}{3}}}{137}c$, 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 $Z = 92$?

________________________________________

Name ________________________________________ Date ___________________ Class___________________

LESSON 11-2

# Simplifying Radical Expressions

## *Reteach*

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

| Product of Powers | Quotient of Powers | Power of a Power | Power of a Product | Power of a Quotient | Negative Exponent |
|---|---|---|---|---|---|
| $a^m \cdot a^n = a^{m+n}$ | $\dfrac{a^m}{a^n} = a^{m-n}$ | $\left(a^m\right)^n = a^{m \cdot n}$ | $\left(ab\right)^m = a^m b^m$ | $\left(\dfrac{a}{b}\right)^m = \dfrac{a^m}{b^m}$ | $a^{-m} = \dfrac{1}{a^m}$ |

**Example** Simplify the expressions. Assume all variables are positive.

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

Power of a Product $\quad \left(4x^{\frac{1}{3}}\right)^{\frac{3}{2}} = 4^{\frac{3}{2}}\left(x^{\frac{1}{3}}\right)^{\frac{3}{2}}$

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

Simplify. $\quad = 8x^{\frac{1}{2}}$

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

Quotient of Powers $\quad \left(\dfrac{5y^{\frac{3}{4}}}{y^{\frac{1}{4}}}\right)^2 = \left(5 \cdot y^{\left(\frac{3}{4}-\frac{1}{4}\right)}\right)^2 = \left(5 \cdot y^{\frac{2}{4}}\right)^2 = \left(5y^{\frac{1}{2}}\right)^2$

Power of a Product $\quad = 5^2\left(y^{\frac{1}{2}}\right)^2$

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

Name ______________________________ Date ______________ Class______________

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

________________________

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

________________________

4. $\dfrac{\left(a^2\right)^2}{a^{\frac{3}{2}}b^{\frac{1}{2}} \bullet b}$

________________________

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

________________________

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

________________________

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

________________________

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

________________________

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 $f = \dfrac{1}{2\pi}\sqrt{\dfrac{g}{l}}$, 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.

    ________________________________________