

Key

5/8/17

READY TO GO ON?

CHAPTER
8

SECTION 8A

Quiz for Lessons 8-1 Through 8-5

8-1 Variation Functions

- The mass m in kilograms of a bronze statue varies directly as its volume V in cubic centimeters. If a statue made from 1000 cm^3 of bronze has a mass of 8.7 kg , what is the mass of a statue made from 4500 cm^3 of bronze? **39.15 kg**
- The time t in hours needed to clean the rides at an amusement park varies inversely with the number of workers n . If 6 workers can clean the rides in 6 hours, how many hours will it take 10 workers to clean the rides? **3.6 hours**

8-2 Multiplying and Dividing Rational Expressions

Simplify. Identify any x -values for which the expression is undefined.

$\frac{x^2}{2x+1}$ $x \neq -\frac{1}{2}$
 $x \neq 0$

- $\frac{5x^3}{10x^2 + 5x}$
- $\frac{x^2 - 2x - 3}{x^2 + 5x + 4} \cdot \frac{x-3}{x+4}$ $x \neq -4, x \neq -1$
- $\frac{-(x-6)}{-x+6} \cdot \frac{-1}{x+3}$ $x \neq 3, x \neq 6$

Multiply or divide. Assume that all expressions are defined.

- $\frac{x+3}{x+2} \cdot \frac{2x-4}{x^2-9} \cdot \frac{2(x-2)}{(x+2)(x-3)}$
- $\frac{9x^6y}{27x^2y^5} \div \frac{x}{6y^2}$ **$\frac{2x^3}{y^2}$**
- $\frac{2x^3 - 18x}{x^2 - 2x - 8} \div \frac{x^2 + x - 12}{x^2 - 16}$
~~2x(x+3)~~
 $\frac{2x(x+3)}{(x+2)}$

8-3 Adding and Subtracting Rational Expressions

Add or subtract. Identify any x -values for which the expression is undefined.

$\frac{2x-3}{x-2}$ $x \neq 2$

- $\frac{3x+2}{x-2} - \frac{x+5}{x-2}$
- $\frac{x^2 - x}{x^2 - 25} + \frac{3}{x+5}$ $x \neq 5, x \neq -5$
- $\frac{1}{x-3} - \frac{1}{x+3}$
 $\frac{x^2 + 2x + 3}{(x+3)(x-3)}$
 $x \neq -3, 3$

12. A plane's average speed when flying from one city to another is 550 mi/h and is 430 mi/h on the return flight. To the nearest mile per hour, what is the plane's average speed for the entire trip? **483 mi/hr.**

8-4 Rational Functions

Using the graph of $f(x) = \frac{1}{x}$ as a guide, describe the transformations and graph each function.

- $g(x) = \frac{1}{x-4}$ **4 units to the right**
- $g(x) = \frac{1}{x+1} + 2$ **1 unit left, 2 units up**

Identify the zeros and asymptotes of each function. Then graph.

- $f(x) = \frac{x^2 - 16}{x - 3}$ **zeros: (4,0), (-4,0)**
VA: $x=3$
HA: none
- $f(x) = \frac{2x}{x^2 - 4}$ **zeros: (0,0)**
VA: $x=2, x=-2$
HA: $y=0$

8-5 Solving Rational Equations and Inequalities

Solve each equation.

- $y - \frac{10}{y} = 3$ **-2, 5**
- $\frac{x}{x-8} = \frac{24-2x}{x-8}$ **no solution**
- $\frac{-3x}{3} - \frac{x+15}{x+9} = 1$ **-8, -3**

- A restaurant has two pastry ovens. When both ovens are used, it takes about 3 hours to bake the bread needed for one day. When only the large oven is used, it takes about 4 hours to bake the bread for one day. Approximately how long would it take to bake the bread for one day if only the small oven were used?

12 hours.

Algebra II/ Trig – Check Point

Sec. 8.1- 8.5 Rational Functions

Name: Key.

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- 8.1 The number of tiles n needed to cover a floor varies directly as the area a of the floor, and $n = 180$ when $a = 20 \text{ ft}^2$. Find n when $a = 34 \text{ ft}^2$.

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$$a = kn$$
$$20 = k(180)$$
$$k = \frac{1}{9}a$$
$$34 = \frac{1}{9}an$$
$$\frac{34 \times 9}{306} = n$$

8.2

$$\frac{(x-3)(x+5)}{x^2+2x-15} \div \frac{x^2-9}{2x-4} = \frac{2(x+5)}{(x+3)}$$

8.3

$$\frac{1}{x^2-x-6} + \frac{-x}{x+2} \cdot \frac{(x-3)}{(x-3)} = \frac{1-x(x-3)}{(x+2)(x-3)} = \frac{1-x^2+3x}{(x+2)(x-3)} = \frac{-x^2+3x-1}{(x+2)(x-3)}$$

8.4

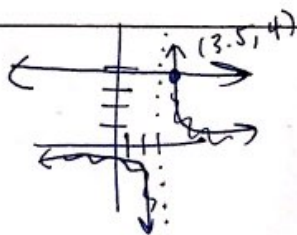
$$f(x) = \frac{x-3}{x^2+6x+5} = \frac{x-3}{(x+5)(x+1)}$$

$$\frac{-3}{5(1)} = \frac{-3}{5}$$

Holes: none	Domain: \mathbb{R} except $-5, -1$
Zeros: $(3, 0)$	Range: \mathbb{R} scribbled out
Y-Int.: $(0, -3/5)$	Sketch Graph (with asymptotes):
VA: $x = -5, x = -1$	
HA: $y = 0$	

8.5 Solve.

$$\frac{2}{x-3} < 4$$



$$x < 3 \text{ or } x > 3.5 \quad \frac{2}{x-3} < 4 \quad \begin{matrix} x-3 > 0 \\ +3 & +3 \\ \hline x > 3 \end{matrix}$$

$$\text{and } x > 3 \quad \begin{matrix} 2 < 4(x-3) \\ 2 < 4x-12 \\ +12 & +12 \\ \hline 14 < 4x \end{matrix} \quad x > \frac{7}{2}$$