Study Guide for Unit 5
SpringBoard

Name _____

Date _____ Period _____

Add. Determine any values that make the expression undefined.

1. $\dfrac{6}{x^2+4x-32} + \dfrac{x-5}{x-4}$

Divide. Assume that all expressions are defined.

2. $\dfrac{8x^2 + 6x + 1}{8x^2 + 14x + 3} \div \dfrac{2x + 1}{x^2 + 4x}$
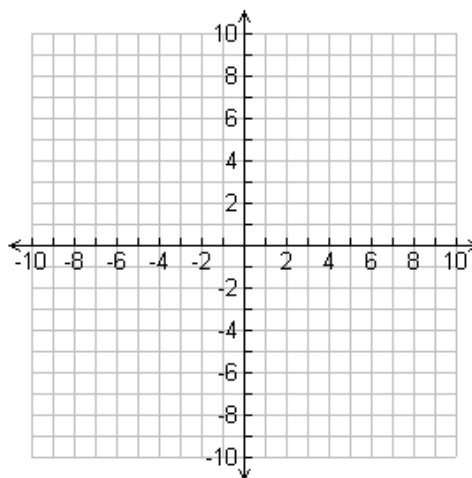
Solve.

3. $\dfrac{x}{x-3} + \dfrac{x}{3} = \dfrac{6x}{2x-6}$

4. $\dfrac{x-5}{x} > 2$

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

Describe the transformations and graph the function. State the domain and range.

6. $g(x) = \sqrt{3(x+5)} - 4$

7. Given $f(x) = \dfrac{x^2+6x-7}{x^2-x}$. Identify any zeros, asymptotes, or holes in the graph.

8. Given $g(x) = \dfrac{x^2-4x+3}{x-5}$. Identify any zeros, asymptotes, or holes in the graph.

9. Create a sample function based on the following descriptions.
   a) The parent function $y = \sqrt{x}$ has been horizontally compressed by ¾, translated right 5 and translated up 6.

   b) A rational function has a horizontal asymptote of y = 4, a hole at x = 5, and a vertical asymptote of x = -3.

10. The current of a river is moving at 2 mph. Your canoe travels 9 mi downstream and then travels 5 mi upstream. The speed of your canoe in still water is C miles per hour.

   (A) Write an equation that would represent the time traveled downstream and upstream.

   (B) Using the equation in (A), determine the rate of the canoe in still water when the total time traveled was 7 hours.

11. Solve: $2x^{3/2} - 75 = 175$