

Secondary Math III
Unit 5 Review
Assignment 5.8

Name _____
Period _____

- Which expression is equivalent to $\frac{x}{x^3} - \frac{2}{3x^2}$?
 - $\frac{x-2}{3x^3}$
 - $\frac{3x-2x}{3x^3}$
 - $\frac{-x}{3x^2}$
 - $\frac{1}{3x^2}$
- What is the domain of the function $f(x) = \frac{2x-16}{(x-3)}$?
 - All real numbers except 3
 - All real numbers except 0
 - All real numbers except 8
 - All real numbers except -3
- Which function has a graph with a hole?
 - $f(x) = \frac{x-2}{x^2+4}$
 - $g(x) = \frac{x^2-3x-18}{(x-3)}$
 - $h(x) = \frac{x^2+3x-18}{(x-3)}$
 - $j(x) = \frac{x^2}{x-1}$
- What is the domain of the function $f(x) = \frac{2x+6}{x-1}$?
 - All real numbers except 0
 - All real numbers
 - All real numbers except 1
 - All real numbers except -1
- Which function has a vertical asymptote at $x = -3$ and a horizontal asymptote at $y = 2/3$?
 - $f(x) = \frac{2x+7}{3x+9}$
 - $g(x) = \frac{2x-3}{x-3}$
 - $h(x) = \frac{2x-3}{3x^2+2}$
 - $j(x) = \frac{4}{6x-3}$

6. What is the LCD (least common denominator) of the following rational expressions:

$$\frac{2}{x+3}, \frac{2x^2}{3}, \text{ and } \frac{x+4}{x^2-9} ?$$

- a. 3
- b. $3(x-3)(x+3)$
- c. x^2-9
- d. $3(x-3)(x^2-9)$

Simplify, multiply, divide, add or subtract as indicated. List any restrictions on the variable and simplify answers where possible.

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

8. $\frac{4x}{3} - \frac{2}{9} + \frac{x^2}{27}$

9. $\frac{x^2+5x}{x+2} \div \frac{x^2+9x+20}{x^2-4}$

10. $\frac{x^2+3x}{5x-15} \cdot \frac{x^2-2x-3}{x^2-9}$

11. $\frac{x - \frac{9}{x}}{1 + \frac{3}{x}}$

12. $\frac{4x^2-8x}{x^2+9x+14} \cdot \frac{x^2+5x-14}{5x-10}$

13. $\frac{4x^3+36x^2}{x^2+12x+27}$

14. $\frac{x - \frac{16}{x}}{1 + \frac{4}{x}}$

Solve each equation. List any restrictions on the variable.

$$15. \frac{5x}{x-2} - 7 = \frac{10}{x-2}$$

$$16. \frac{x+5}{x+1} = \frac{6}{x}$$

$$17. x + \frac{4}{x} = 4$$

$$18. \frac{7}{9} = \frac{x+3}{x-3}$$

Determine asymptotes and holes (if they exist) for the following function.

$$19. f(x) = \frac{x^2+x-12}{6x^2+24x}$$

VA: _____

HA: _____

Hole: _____

Determine the x- and y-intercepts (if they exist). Remember intercepts are points.

$$20. f(x) = \frac{3x+15}{x^2-3}$$

x-intercept(s) _____ y-intercept _____

Find the following and draw the graph of the function. Be sure to draw asymptotes as dashed lines and holes as open circles. (Hint: there is a hole):

$$21. f(x) = \frac{3x+9}{4x^2+4x-24}$$

Simplified form _____

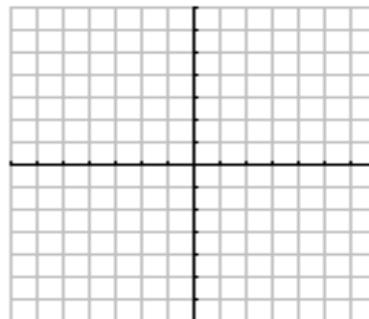
Vertical asymptote(s): _____

Horizontal asymptote: _____

Hole: _____

Intercepts: _____

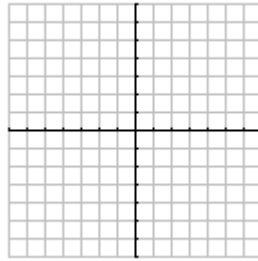
additional points: _____



Review

State the transformations from $f(x) = x^2$ and graph $g(x)$.

22. $g(x) = 3(x+2)^2 - 4$



Use Pascal's Triangle to expand:

23. $(2x - y)^3$

