Name: _____ Period: _____

Secondary 3 Honors

Practice 4-1 – Graphing Rational Functions, Day 1

Find the vertical asymptotes of each rational function.

1. $f(x) = \frac{x^3-2x^2-8x}{4x^2-4x-24}$

2. $f(x) = \frac{x^2+4x+3}{-2x^2-10x-8}$

3. $f(x) = \frac{x^3-16x}{-4x^2+4x+8}$

4. $f(x) = \frac{x^3-5x^2+6x}{4x^2-28x+48}$

5. $f(x) = \frac{2x^2-32}{x^2-3x-4}$

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

Write the equation for the vertical asymptotes. Then write the coordinate points for holes, if any.

7. $f(x) = \frac{x+4}{2x^3+12x^2+16x}$

8. $f(x) = \frac{x^3-x^2-6x}{2x^3+2x^2-12x}$

9. $f(x) = \frac{x^2+3x}{-4x-8}$

10. $f(x) = \frac{x^2+2x-8}{-4x+12}$

Identify the holes, vertical asymptotes, x-intercepts, y-intercepts, and domain of each function.

11. $f(x) = \frac{x^2-x-12}{2x^2-4x-6}$

12. $f(x) = \frac{x^3+2x^2-8x}{4x^2+4x-24}$

13. $f(x) = \frac{2x^2+12x+16}{x^2+5x+4}$

14. $f(x) = \frac{x^2-6x+8}{4x-12}$

Review!

15. Factor Completely: $8x^3 - 17x^2 + 2x$

16. State the degree, list the zeros and their multiplicities, and what happens at each zero. Then sketch the graph by hand.

$f(x) = 4(x-3)^6(x+8)^4$

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4-2 Practice: Graphing Day 2

Find all necessary information and then Graph each equation.

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

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

3. $f(x) = \frac{x(x+1)}{(x-1)(x+3)}$

4. $f(x) = \frac{2(x+4)}{x+3}$

5. $f(x) = \frac{-4(x-2)}{x(x-3)}$

6. $f(x) = \frac{2(x+4)(x+2)}{(x+4)(x+1)}$

Identify the domain, vertical asymptotes, holes, x-intercepts, y-intercepts, and end behavior. DO NOT GRAPH!

7. $f(x) = \frac{(\boldsymbol{x-2})(\boldsymbol{x+4})}{\boldsymbol{4(x+3)(x-2)}}$

8. $f(x) = \frac{(x-4)(x-2)}{4x^2(x-3)}$

9. Write the equation of the rational function given the following information:
Vertical Asymptote: $x = -4$
Holes: $x = 5$
Horizontal Asymptote: $y = 0$

NAME:_____

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4-3 Practice Graphing Rational Functions Period:_____

Find all the critical information and then graph the rational expression by hand.

1. $y = \frac{x^3}{x^2-4}$	2. $y = \frac{x^2-2x-3}{x+4}$
3. $y = \frac{x^2-9x+20}{x+3}$	4. $y = \frac{x^3+7x^2+12x}{x^2+11x+28}$
5. $y = \frac{3x}{x^3-4x}$	6. $y = \frac{x^2+2x-8}{x^2-2x-3}$
7. $y = \frac{x^4+7x^3+10x^2}{x^3+8x^2+15x}$	8. $y = \frac{-x^3+5x^2-4x}{x^3+x^2-2x}$