

Unit 4 Review

Secondary 3 Honors

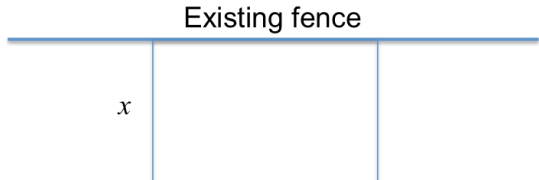
Complete this assignment on your own paper. ☺

Non-Calculator.

- 1) Simplify and state restrictions
- a) $\frac{3x-2}{2x^2} - \frac{4-x}{6}$ b) $\frac{a^3-4a}{a^2-2a-35} \div \frac{a^2+4a+4}{a^2-5a-14}$
- c) $\frac{3x}{2x-6} + \frac{9}{6-2x}$ d) $\frac{\frac{1}{x}+3}{1-9x^2}$
 $\frac{1}{4x}$
- 2) Solve for x
- a) $\frac{6}{x-6} - \frac{2}{x+3} = \frac{18}{x^2-3x-18}$
- b) $\frac{1}{2x} + \frac{3}{x+7} = \frac{-1}{x}$
- 3) What are the equations of the vertical asymptotes of
 $f(x) = \frac{1}{x^2+2x-3}$
- 4) Where is the hole in the graph of $f(x) = \frac{(x-3)(x+4)}{(x+1)(x-3)}$?
- 5) Write the equations of the vertical and horizontal asymptotes of $y = \frac{1}{(x+2)^2}$
 Is the vertical asymptote above odd or even?
- 6) What is the equation of the horizontal asymptote of $y = \frac{2x}{x-1}$?
- 7) Sketch the graphs completely by finding the domain, holes, VA, x -int, y -int, EB, and extra points as needed. (Remember end behavior can be HA, SA, or arrows.....you need to figure out what the function has.)
- a) $f(x) = \frac{x^2-5x+4}{x^2-1}$
- b) $f(x) = \frac{2x^2}{x^2-4}$
- c) $f(x) = \frac{2x^2+7x+3}{x+1}$
- d) $f(x) = \frac{(x-3)^3(x+1)}{x^2+x-2}$

- 8) Write a rational function f that has the specified characteristics (there are many correct answers).
 VA: $x = -1$
 HA: $y = \frac{1}{2}$
 hole: $(3, \frac{3}{8})$
- 9) Give the end behavior of the following functions:
- a) $g(x) = \frac{(x-4)^5(x+2)^4}{5x^3-1}$
- b) $f(x) = \frac{2x^3-5x^2+7}{x^2+x}$
- c) $f(x) = \frac{(x-3)^2(-x+1)^4}{x(x-7)}$
- d) $g(x) = \frac{.01x^{33}-x^{15}}{5-x^6}$
- 10) Simplify.
- a) $\frac{1+\frac{2}{x}}{\frac{x^2-4}{x^2+3x}}$
- b) $\frac{6x}{x^2-2x-8} - \frac{2}{x+2} + \frac{1}{x-4}$
- c) $\frac{x^2-2x-15}{x^2-8x+7} \div \frac{x^2+4x+3}{2x^2-12x-14}$
- 11) Solve for x .
- a) $5(x+4)^2 - 3 = 32$
- b) $5 - x^2 = 7x$
- c) $\frac{3}{x+2} = \frac{-1}{x-4}$
- 12) Graph the following showing at least 2 points
- a) $y = -3(x-2)^2 + 3$
- b) $y = -\sqrt{x+1}$
- 13) Graph the rational functional
 $f(x) = \frac{x^3-4x}{(x+1)(x+2)(x-3)}$

Calculator

- 14) Sketch a graph that has the following characteristics:
 VA: $x = 2$ (odd)
 VA: $x = -2$ (odd)
 SA: $y = x - 1$
 y -int: $(0, 2)$
 x -int: $(1, 0)$ (odd)
 x -int: $(4, 0)$ (even)
- 15) You have to build a corral against an existing fence and you have 100 ft of fencing.
- 
- a) Find the maximum area (include units)
- b) What are the dimensions of the corral with the maximum area? (Units!)