Math 1111: College Algebra   Name_____
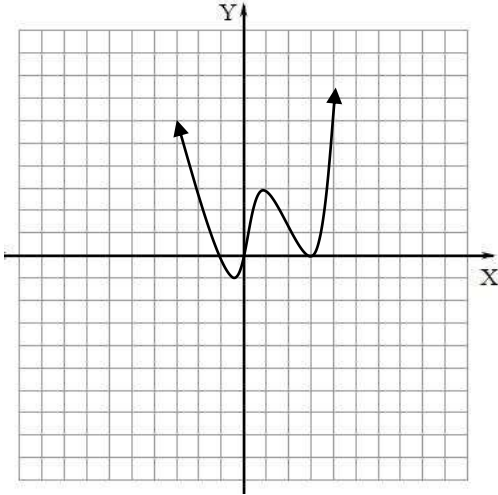Review Material
   1. f(x) is a degree 4 polynomial whose graph is shown below. Use the graph to factor f(x).

   2. Find a rational function with the following features:

      x-intercepts at 5 and 3; y-intercepts at 15;
      vertical asymptote at x = 1; horizontal asymptote at y = 1
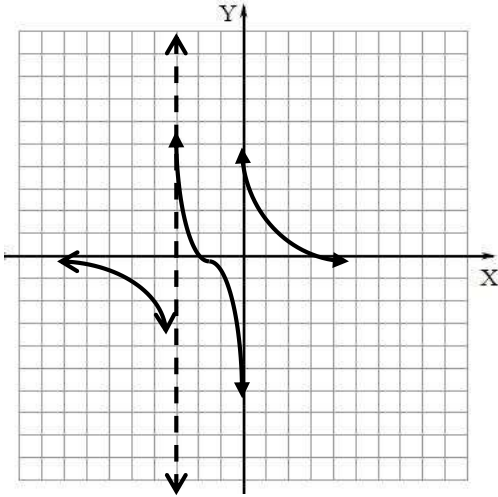
   3. Find the horizontal asymptote of the given function: $g(x) = \dfrac{x + 7}{x^2 - 3}$

   4. Write an equation for a function with a hole in its graph at x = 3.

   5. In the following formula, f(x) is the minimum number of hours of studying required to attain a
      test score of x: $f(x) = \dfrac{0.55x}{125.5 - x}$. How many hours of study are needed to score a 90?

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6. Find an equation for the rational function whose graph is shown below.

Follow these steps: 1) Find the vertical asymptotes.
2) Find the horizontal asymptotes
3) Find the x-intercept.

7.If f varies jointly as q^2 and h, and f = 64 when q = 6 and h = 2, find q when f = 160 and h = 5.

8. Solve for x: $e^{x-6} = \left(\dfrac{1}{e^4}\right)^{x+6}$

9. Find the future value of $6996 invested for 8 years at 5% compounded quarterly.

10. The number of reports of a certain virus has increased exponentially since 1960. The number of cases can be approximated using the functions $r(t) = 54e^{0.006t}$, where t is the number of years since 1960. Estimate the number of cases in the year 2000.

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11. Solve for x: $\log_7 343 = x$

12. Write the expression as a sum difference, or product of logarithms. Assume that all variables represent positive real numbers. $\log_a(8x^2y^3)$

13. Given that $\log_a 2 = 0.301$ and $\log_a 3 = 0.4771$, find $\log_a \sqrt{48}$

14. Solve the rational inequality. Write the solution in interval notation and on a number line.

$$\frac{(2x - 3)(3x + 8)}{(x - 6)} \geq 0$$

15. Solve the rational inequality. Write the solution in interval notation and on a number line.

$$\frac{(x - 9)(x + 7)}{(x - 8)} \leq 0$$

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16. Write the equation for the line through (-2, -1) perpendicular to -3x - 8y = -32
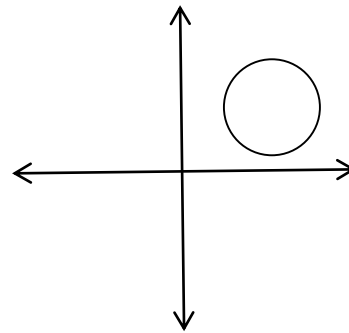
17. Write the equation for the line through (4, -2) parallel to 2x – y = 5

18. Determine whether the relation defines a function. Explain

a)

# of Rounds of Golf Played in the U.S.	
Year(x)	# Rounds (y)
1997	547,200,000
1998	528,500,000
1999	564,100,000
2000	587,100,000

B.

19. Solve the system of inequalities
    2x + 8y = 3
    4x – 12y = -1

20. Solve the system of inequalities: x + y ≤ 4
                                         5x – y ≥ 8