Beverly Hills High School -- IAT -- Quest #3 -- Chapter 8 -- 75 points

As usual, show all your work for full credit. Partial credit for partial achievement. Pencils only. All problems are five points unless specified otherwise.

1) The cost of gasoline, C, varies directly as the number of gallons, g, purchased.

   a) Write this relationship as an equation: _____

   b) Over the course of a week, Chuy bought twenty-one gallons of gas for his '64 Chevy Impala. It cost him $63.00. Determine the constant of proportionality.

   c) During the next month, he expects to buy 80 gallons of gas. How much should he expect to pay?

2) Give a real-world example of an

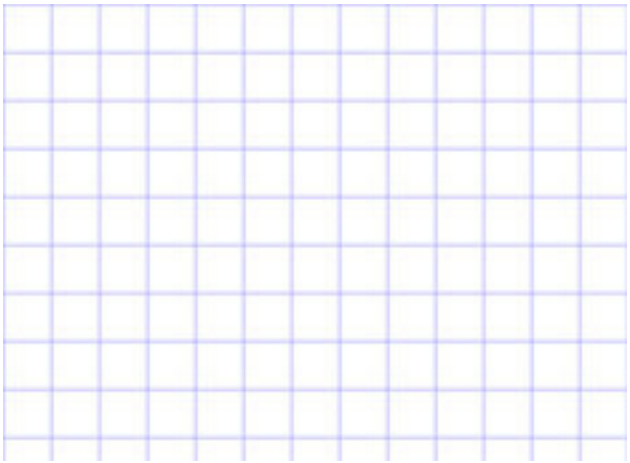
   a) inverse relation: _____

   b) inverse square relation: _____

3) Y varies directly as the square of x. If y is 36 when x is 8, find x when y is 324.

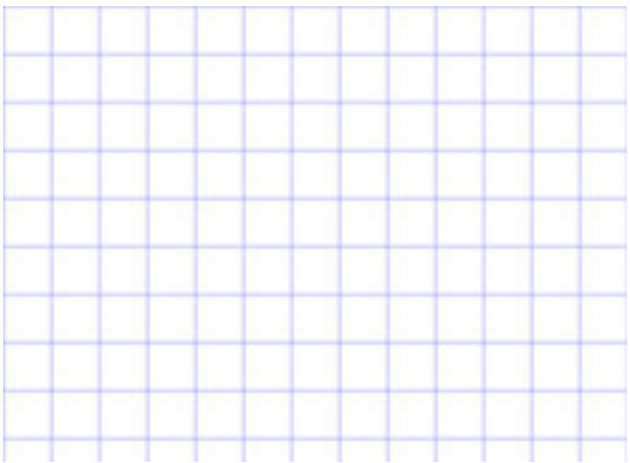
Graph each of the following rational functions and answer questions for each:

4) $y = \frac{-2}{x+3}$



What value does y approach as x goes to infinity?

5) $y = \frac{4}{x(x-4)}$



What is(are) the asymptote(s) of this function?

Multiply, divide, add or subtract as indicated. Then simplify completely.

6) $\frac{x^2-7x+12}{2x^2-18} \cdot \frac{4(x+3)^2}{4-x}$

7) $\frac{6a^2-11a-10}{-12a-8} \cdot \frac{8a^2+16a+8}{2a^2-3a-5}$

8) $\frac{(-6t-8)(t-6)^2}{(8t-48)^2} \div \frac{3t^2-2t-8}{64t^2-256}$

9) $\frac{3}{n}+\frac{2}{n+2}-\frac{1}{n^2}$

10) $\frac{2x}{x+3}-\frac{6x}{x-7}$

Simplify each of these:

11) $$\frac{\frac{3}{k}+\frac{8}{m}}{\frac{6}{m}-\frac{5}{k}}$$

12) $$\frac{\frac{3x}{x-1}-\frac{4x}{x+2}}{\frac{2x}{x+2}+\frac{5x}{x-1}}$$

Solve each of these for the indicated variable.

13) $$\frac{2p-3}{2p+1}=\frac{p-4}{p+2}$$

14) $$\frac{3}{n-7}+1=\frac{8}{n^2-9n+14}$$

15) $$\frac{2y}{y-1}+\frac{2}{3}-\frac{10}{y-1}=0$$