Name_____ Group_____   /18

Functions: Rational Functions

(each question is worth 2 points)

1) Solve the following inequality: $\frac{3}{2x+4} \geq 0$

$$]-2,+\infty[$$

2) Given $f(x) = 3x + 6, g(x), g(x) = \frac{2x+4}{x-8}$ and $h(x) = g(f(x))$
Determine the asymptotes of $h(x)$

$$x = \frac{2}{3} \ and \ y = 2$$

3) What are the zero(s) for the following function: $f(x) = \frac{4x-6}{5x+2}$

$$Zero \ at \ x = 1.5$$

4) Given $g(x) = \frac{7}{3x-6}$, solve for $g(14)$

$$g(14) = \frac{7}{36} \, or \, 0.194$$

5) Find the rule of a rational function with asymptotes at $x = -5 \, and \, y = -2$ and an x-intercept of -3
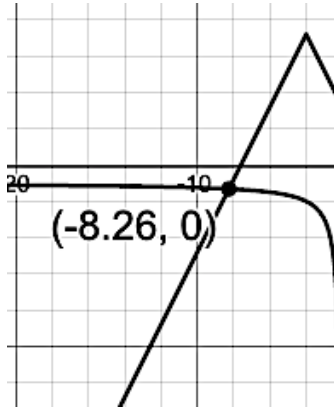
$$f(x) = \frac{4}{x+5} - 2$$

6) Solve the following inequality: $-\frac{5}{2x+8} + 2 \geq x - 3$

$$]-\infty, -4[\cup [-3.7131, 4.7131]$$

7) An absolute value function and a rational function are shown below.
- The absolute value function has a rule of $f(x) = -2|x + 4| + 7.2$
- The rational function has asymptotes at $x = -2 \; and \; y = -1$
- The rational function and the absolute value function intersect at $x = -8.26$

What is the rule of the rational function?

(-8.26, 0)

$$g(x) = \frac{2.0032}{x + 2} - 1$$

8) A rational function has the rule $g(x) = \frac{3x+2}{2x-5}$

What is the rule of $g^{-1}(x)$?

$$g^{-1}(x) = \frac{5x + 2}{2x - 3}$$

9) Given rational function $f(x) = -\frac{2}{2x+4} + 6$

Which of the following functions never intersects with $f(x)$?

C) $g(x) = 2|-3x - 30| - 5$ C) $i(x) = -2|-3x - 30| - 5$

B) $h(x) = 2\sqrt{-3x - 30} - 5$ D) $j(x) = -2\sqrt{-3x - 30} - 5$