Quiz Rational Functions 2014 version 1.doc **Name:**_____

1) Match each equation with its graph below.

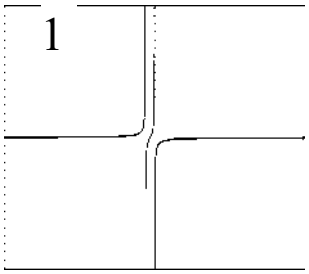
_____ $f(x)=\dfrac{x^2-1}{x^2+2x}$

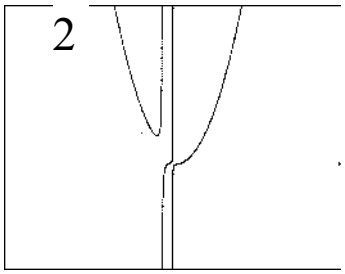
_____ $g(x)=\dfrac{-x-1}{x^2+2x}$

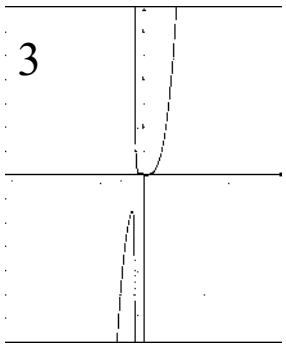
_____ $h(x)=\dfrac{x^4+1}{x^2+2x}$

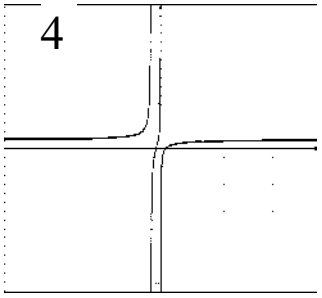
_____ $j(x)=\dfrac{x^3-1}{x^2+2x}$

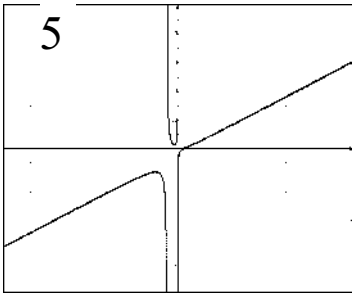
_____ $k(x)=\dfrac{-x^2-1}{x^2+2x}$

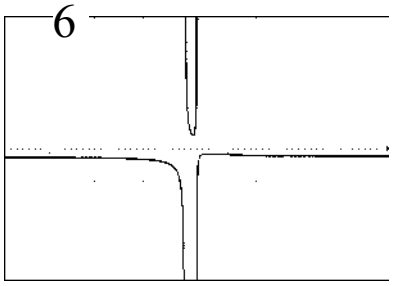












2) For the functions below find the x and y intercepts and vertical and horizontal asymptotes.

(a) $f(x)=\dfrac{5x+1}{3x^2+1}$

y-intercept(s): _____ x-intercept(s): _____

Vertical asymptote(s): $x=$ _____

Horizontal asymptote: $y=$ _____

(b) $f(x)=\dfrac{2x^2+11x+5}{x^2+3x}$

y-intercept(s): _____ x-intercept(s): _____

Vertical asymptote(s): $x=$ _____

Horizontal asymptote: $y=$ _____

3) Given the following information about a rational function, make a sketch of the function.

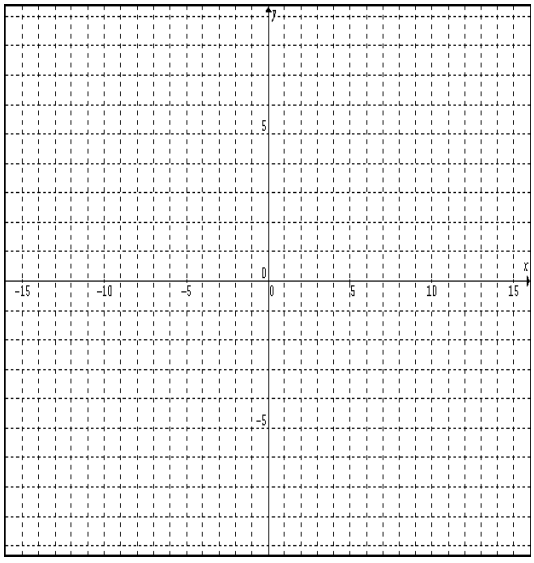
$$y = \frac{x^2 + x - 2}{x^2 + x - 6}$$

y-intercept: $y = \frac{1}{3}$

x-intercepts: $x = -2,\ x = 1$

Vertical asymptotes: $x = -3, x = 2$

Horizontal Asymptote: $y = 1$



4) Given the following information about a rational function, make a sketch of the function.

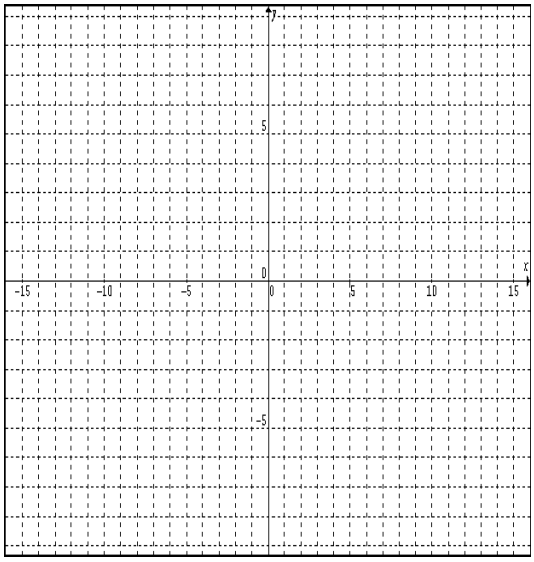
$$y = \frac{-x}{x^2 - 3x - 4}$$

y-intercept: $y = 0$

x-intercepts: $x = 0$

Vertical asymptotes: $x = -1, x = 4$

Horizontal Asymptote: $y = 0$



5) Find the equation of the slant asymptote of h(x).

$$h(x) = \frac{3x^3 - 4x^2 + 5x - 1}{x^2 + x}$$

Slant asymptote: $y =$ _____

6) Given the following information about the rational function f(x), make a sketch of the function.

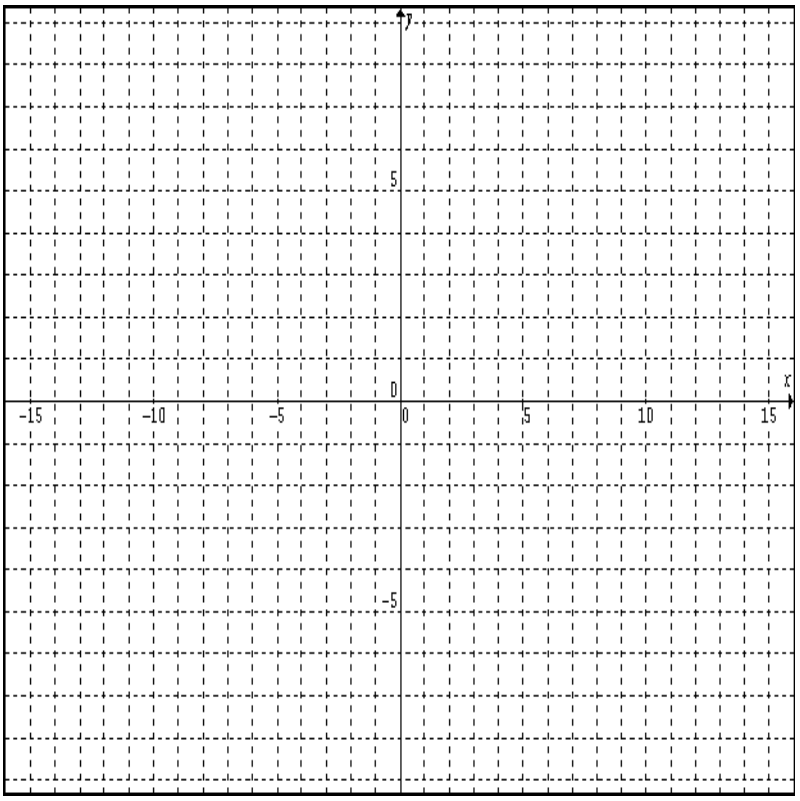
$$f(x) = \frac{x^3 - 2x^2 - 3x}{x^2 - 4}$$

y-intercept(s): $y = 0$

x-intercept(s): $x = -1, x = 0, x = 3$

Vertical asymptote(s): $x = 2, x = -2$

Slant asymptote(s): $y = x - 2$



7) Use long division to re-write $f(x)$. To get full credit for this problem, you must choose the appropriate multiple-choice answer and show your work.

$$f(x) = \frac{2x^5 + 8x^4 - 6x^2 - x}{x^2 + 2x}$$

a) $f(x) = 2x^3 + 4x^2 - 14 + \frac{27x}{x^2 + 2x}$

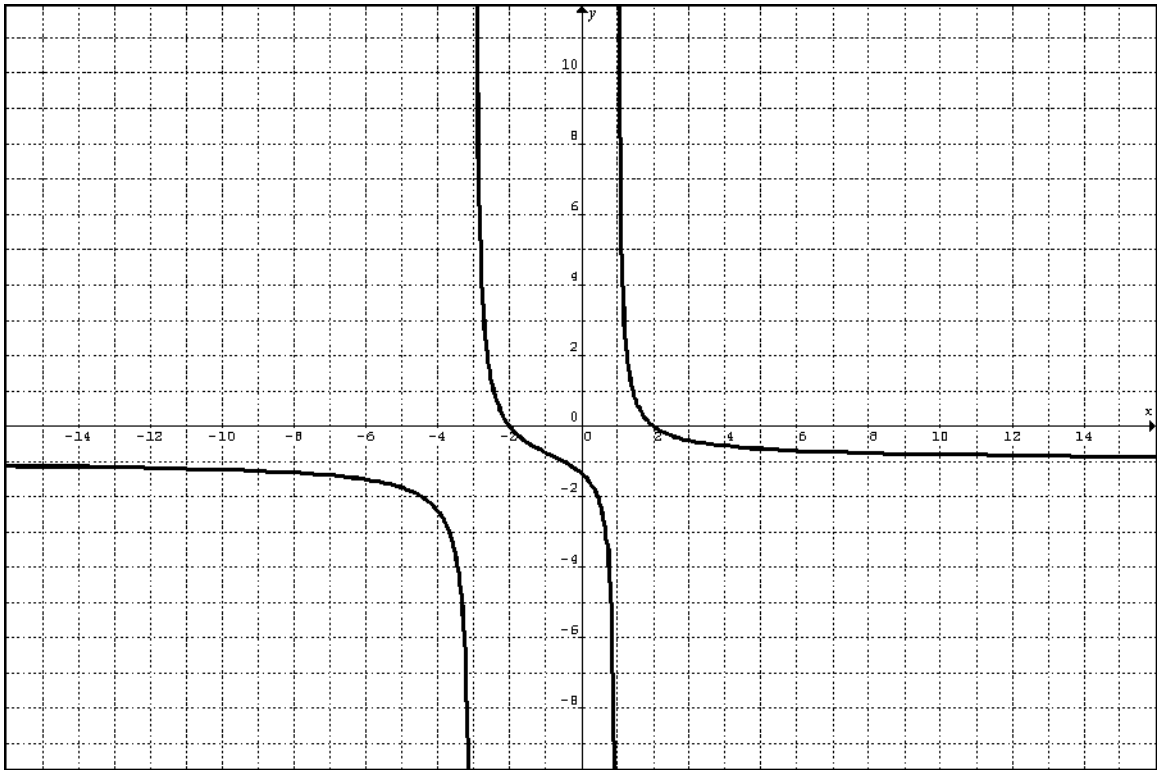
b) $f(x) = 2x^3 + 4x^2 - 8x + 10 + \frac{-21x}{x^2 + 2x}$

c) $f(x) = 2x^3 + 12x^2 - 30 + \frac{59x}{x^2 + 2x}$

d) $f(x) = 2x^3 + 12x^2 - 6x - 12 + \frac{23x}{x^2 + 2x}$

e) $f(x) = 2x^3 + 4x^2 - 8x - 6 + \frac{4x}{x^2 + 2x}$

8) Find a possible equation for the rational function graphed below.



$y =$

9) Find a possible equation for the polynomial function graphed.