Name:_____ **Quiz Rational Functions 2017v1**

1) Match each equation below with its graph.

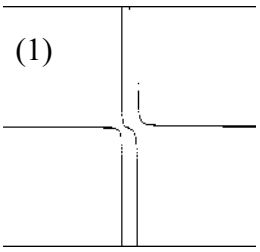
_____ a) $f(x)=\dfrac{x+1}{x^2-4}$

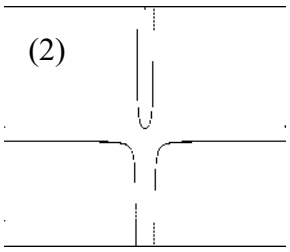
_____b) $f(x)=\dfrac{x^4+1}{x^2-4}$

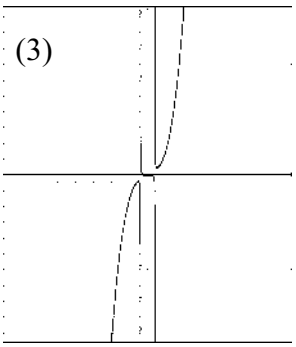
_____c) $f(x)=\dfrac{x^3+1}{x^2-4}$

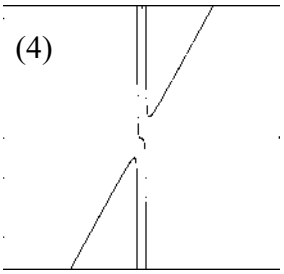
_____d) $f(x)=\dfrac{-2x^2+1}{x^2-4}$

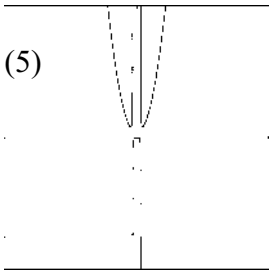
_____e) $f(x)=\dfrac{x^5+1}{x^2-4}$

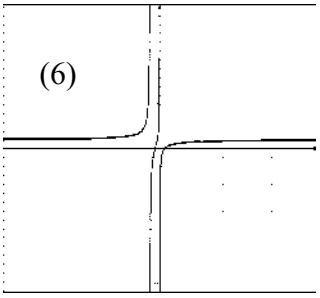












2) For the functions below find the x and y intercepts and vertical and horizontal/slant asymptotes.

(a) $f(x)=\dfrac{2x^2-8}{x^2+2x-15}$

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

Vertical asymptote(s): _____

Horizontal or slant asymptote(s): _____

(b) $f(x)=\dfrac{6x}{x^2+3}$

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

Vertical asymptote(s): _____

Horizontal or slant asymptote(s): _____

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

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

y-intercept: -3 x-intercepts: $x=1$ *and* -3

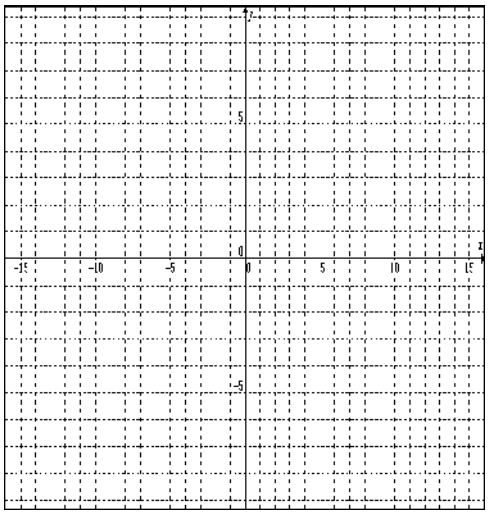
Undefined when: $x=-1$

Vertical asymptote: $x=-1$

As $x\to\infty$, $f(x)\to\infty$

As $x\to-\infty$, $f(x)\to-\infty$

Slant asymptote: $y=x+1$



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

$$y=\frac{x^2-9}{x^2-4}$$

y-intercept: $\frac{9}{4}$ x-intercepts: -3 *and* 3

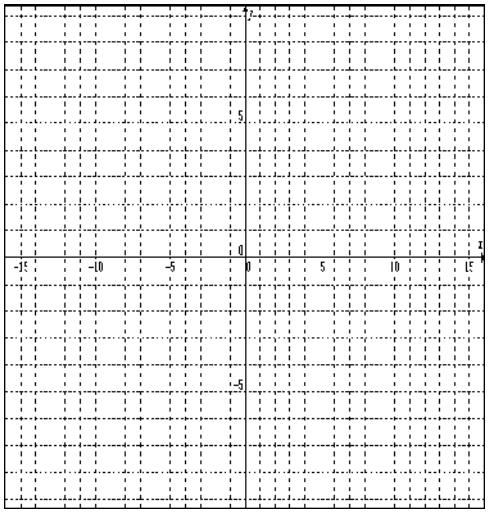
Undefined when: $x=-2, x=2$

Vertical asymptote: $x=-2, x=2$

As $x\to\infty$, $y\to1$

As $x\to-\infty$, $y\to1$

Horizontal asymptote: $y=1$



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

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

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

$$f(x)=\frac{2x^4+5x^2-7}{x^2-2x}$$

a) $f(x)=2x^2+4x+13+\dfrac{19x}{x^2-2x}$

b) $f(x)=2x^2+9+\dfrac{11x}{x^2-2x}$

c) $f(x)=2x^2-4x+13+\dfrac{-26x-7}{x^2-2x}$

d) $f(x)=2x^2+4x+13+\dfrac{26x-7}{x^2-2x}$

e) $f(x)=2x^2+9+\dfrac{18x-7}{x^2-2x}$

For question #7, fill in the following information and sketch the function.

7) $$f(x)=\frac{1}{x^2-x-2}$$

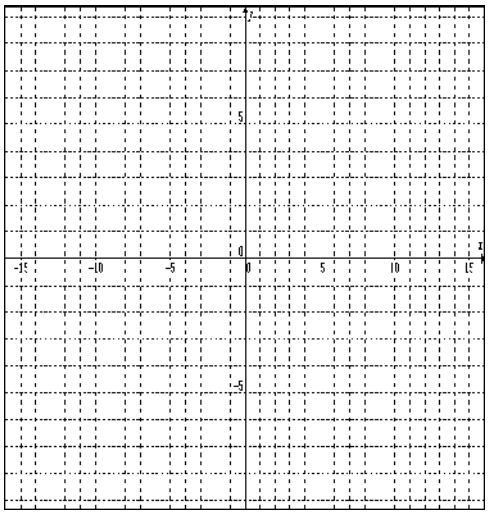
y-intercept(s):_____ x-intercept(s):_____

Undefined when: x = _____

Vertical asymptote(s):_____

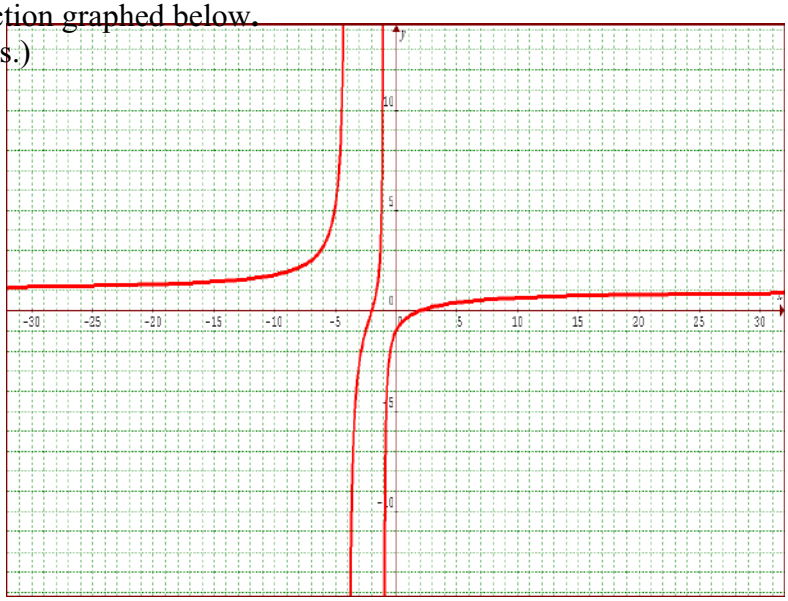
As $x\to\infty$, $f(x)\to$ _____

As $x\to-\infty$, $f(x)\to$ _____



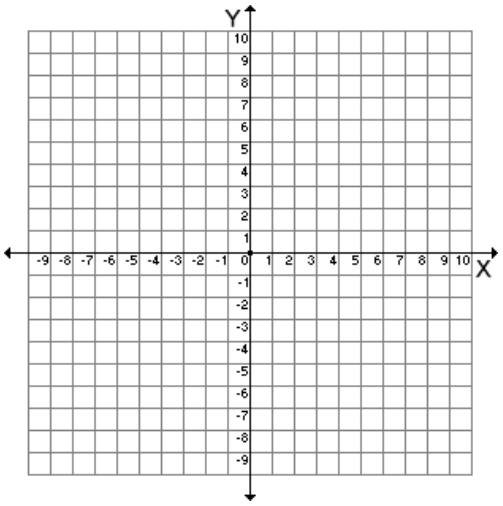
Horizontal or slant asymptote(s):_____

8) Find a possible equation for the rational function graphed below.
(Note: All intercepts and asymptotes are integers.)



9) Graph each conic section below:

a) $\dfrac{(x+1)^2}{4}+\dfrac{(y-3)^2}{25}=1$



b) $9x^2+18x-4y^2+24y-63=0$