Bell Work

Given the following function: $h(x) = \dfrac{2x - 4}{x^2 - 4}$

Holes:

Vertical Asymptote:

Horizontal Asymptote:

Find the vertical and horizontal asymptotes without your calculator.

1. $y = \dfrac{2x^2}{x^2 - 9}$

2. $y = \dfrac{x^3 + 3x - 4}{2 - x}$

3. $y = \dfrac{4}{x^2 + 2}$

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

5. $g(x) = \dfrac{4x - 4}{2x^2 + x - 3}$

6. $f(x) = \dfrac{4x - 2}{4x^2 - 1}$

End behavior Asymptotes:

vertical asymptotes:

Set the factors of the denominator = 0, then solve for x

horizontal asymptotes: think of end behavior

Think about large values of x, what line do the answers approach?

Compare the degree & leading coefficient of the numerator and denominator:

$$f(x) = \frac{nx^{a}\ldots}{mx^{b}\ldots}$$

a) a < b, y = 0

b) a = b, y = n/m (ratio of leading coefficients)

c) a > b, y = higher degree polynomial

Focusing on case 3 today where the degree of the numerator is bigger than the degree of the denominator.

**They are not classified as horizontal or vertical asymptotes.

**There will not be a horizontal asymptote in this case.

Naming higher degree end behavior asymptotes:

Find the difference in the degrees of the numerator and denominator.

Function	Name the higher degree end behavior asympotote.
$f(x)=\dfrac{x^4+2x^2-1}{x^3+1}$	
$f(x)=\dfrac{x^4-2x+7}{x^2-1}$	
$f(x)=\dfrac{x^4-1}{x-1}$	

Given the following function find the end behavior asymptote and name it.

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

Given the following function find the end behavior asymptote and name it.

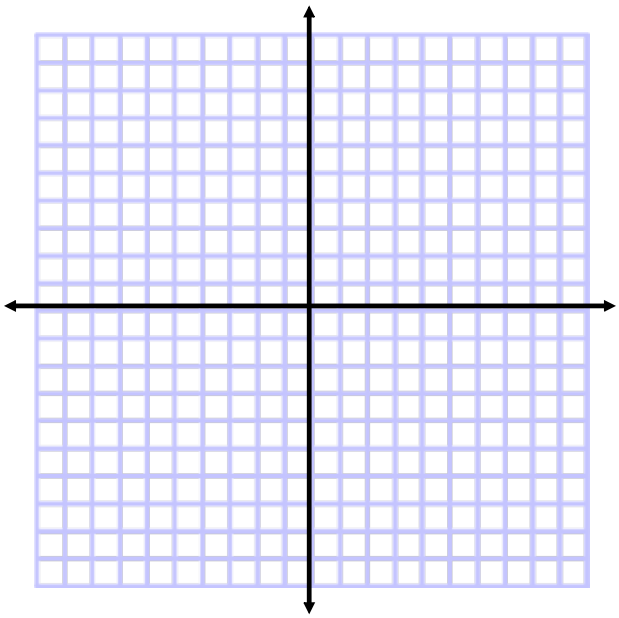
$$f(x) = \frac{2x^2 + 2x - 3}{x + 3}$$

Given the following function find the end behavior asymptote and name it.

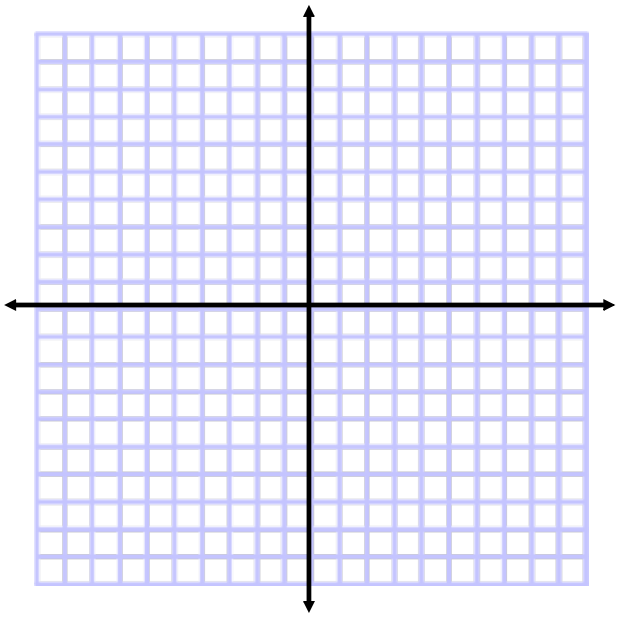
$$f(x) = \frac{x^5 + 1}{x^2 + 1}$$

Draw the graph of the rational function and show all asymptotes.

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



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



Hole:

Vertical asymptote:

Horizontal asymptote:

End behavior asymptote:

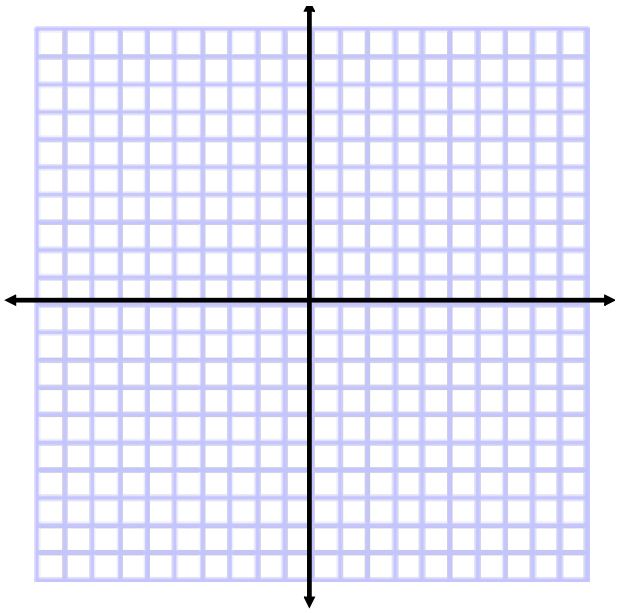
x – Intercept:

y – Intercept:

Domain:

Range:

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



Hole:

Vertical asymptote:

Horizontal asymptote:

End behavior asymptote:

x – Intercept:

y – Intercept:

Domain:

Range:

Worksheet 2.6B