

Horizontal and Slant Asymptotes

Introduction to Calculus

Name _____

1) Find the equations of the horizontal or slant asymptotes of the following rational functions.

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

y = _____

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

y = _____

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

y = _____

d) $f(x) = \frac{6x^3-8x^2+5x+4}{x^2-x}$

y = _____

2) Fill in each sentence below.

A rational function will have a horizontal asymptote when _____.

A rational function will have a slant asymptote when _____.

A rational function will have non-linear end behavior when _____.

3) Sketch the following rational functions:

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

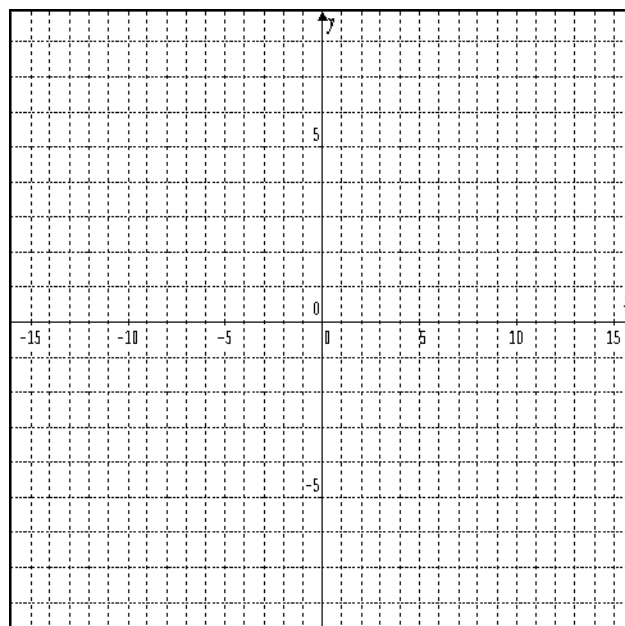
y-intercept: _____ x-intercept: _____

Vertical asymptote(s): _____

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

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

Horizontal or Slant asymptote: _____



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

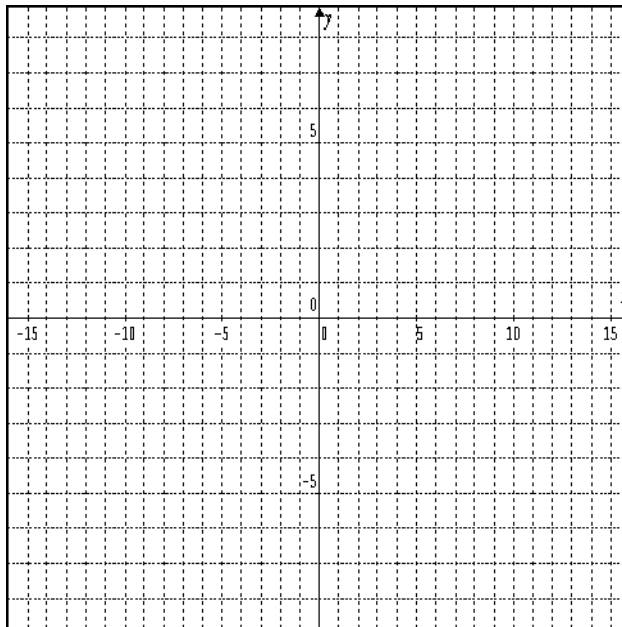
y-intercept: _____ x-intercept: _____

Vertical asymptote(s): _____

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

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

Horizontal or Slant asymptote:



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

y-intercept: _____ x-intercept: _____

Vertical asymptote(s): _____

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

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

Horizontal or Slant asymptote:

