

Directions: For #1-18, evaluate each limit to infinity.

1)  $\lim_{x \rightarrow \infty} \frac{1}{x^2-4} =$

2)  $\lim_{x \rightarrow -\infty} \frac{x^2-1}{2x+4} =$

3)  $\lim_{x \rightarrow \infty} \frac{x^2-2x}{x+1} =$

4)  $\lim_{x \rightarrow -\infty} \frac{1-x}{2x^2-5x-3} =$

5)  $\lim_{x \rightarrow \infty} \frac{2x^3-3x^2+1}{x+3} =$

6)  $\lim_{x \rightarrow -\infty} \frac{(2x-1)(3-x)}{(x-1)(x+3)} =$

7)  $\lim_{x \rightarrow \infty} \frac{2x^4-x^3+x^2-1}{2-x} =$

8)  $\lim_{x \rightarrow -\infty} \frac{x^2-1}{1-x^2} =$

9)  $\lim_{x \rightarrow \infty} \frac{x}{x+9} =$

10)  $\lim_{x \rightarrow -\infty} \frac{3x^2+20x}{4x^2+9} =$

11)  $\lim_{x \rightarrow \infty} \frac{3x^2+20x}{2x^4+3x^3-29} =$

12)  $\lim_{x \rightarrow -\infty} \frac{5(4x+3)}{(x+1)(x-1)} =$

13)  $\lim_{x \rightarrow \infty} \frac{7x-9}{4x+3} =$

14)  $\lim_{x \rightarrow -\infty} \frac{7x^2-9}{4x+3x^2} =$

15)  $\lim_{x \rightarrow \infty} \frac{7x-9}{4+3x} =$

16)  $\lim_{x \rightarrow -\infty} \frac{5x-9x^2}{4x^2+1} =$

17)  $\lim_{x \rightarrow \infty} \frac{x^2-1}{4+x} =$

18)  $\lim_{x \rightarrow -\infty} 3x^2 + 2x - 1 =$

Directions: For #19-24, find any vertical and/or horizontal asymptotes. Provide evidence for your conclusions.

$$19) f(x) = \frac{x-1}{x^2+5x+6}$$

$$20) g(x) = \frac{x^3-4x^2}{x^2-3x-4}$$

$$21) h(x) = \frac{3x^2+6x}{x^2-4}$$

$$22) j(x) = \frac{2x^2-12x+10}{x^3-6x^2+5x}$$

$$23) k(x) = \frac{x^2+2}{3x-9}$$

$$24) m(x) = \frac{12+3x}{2x+8}$$