

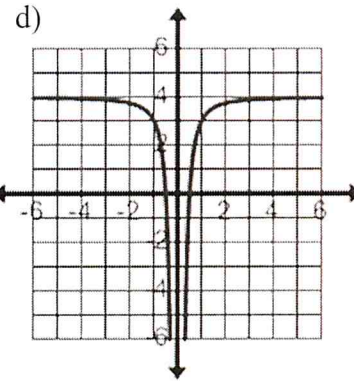
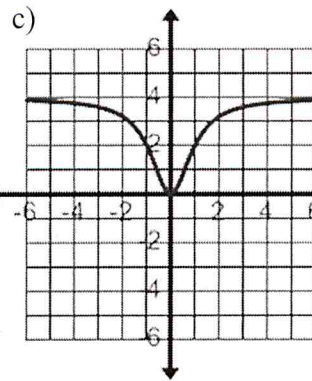
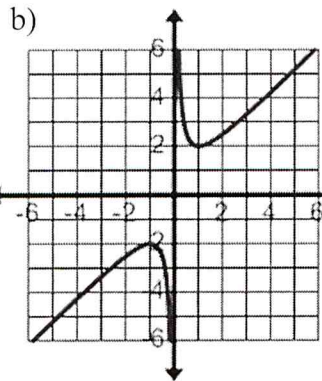
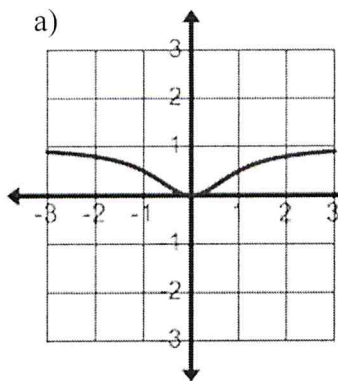
Pre-Calculus
Limits at Infinity

Name:

Date:

Period:

Match the function with its graph, using horizontal and vertical asymptotes as aids.



1) $f(x) = \frac{4x^2}{x^2 + 1}$

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

3) $f(x) = 4 - \frac{1}{x^2}$

4) $f(x) = x + \frac{1}{x}$

Find the limit (if it exists). If the limit does not exist, then explain why. Use a graphing calculator to verify your result graphically.

5) $\lim_{x \rightarrow \infty} \left(\frac{3}{x^2} + 1 \right)$

6) $\lim_{x \rightarrow \infty} \left(\frac{4}{3x} - 5 \right)$

7) $\lim_{x \rightarrow \infty} \left(\frac{1-x}{1+x} \right)$

8) $\lim_{x \rightarrow \infty} \left(\frac{1+5x}{1-4x} \right)$

9) $\lim_{x \rightarrow -\infty} \left(\frac{4x-3}{2x+1} \right)$

10) $\lim_{x \rightarrow \infty} \left(\frac{1-2x}{x+2} \right)$

11) $\lim_{x \rightarrow -\infty} \left(\frac{3x^2-4}{1-x^2} \right)$

12) $\lim_{x \rightarrow -\infty} \left(\frac{3x^2+1}{4x^2-5} \right)$

13) $\lim_{t \rightarrow \infty} \frac{t^2}{t+3}$

14) $\lim_{y \rightarrow \infty} \frac{4y^4}{y^2+3}$

15) $\lim_{x \rightarrow -\infty} \frac{-(x^2+3)}{(2-x)^2}$

16) $\lim_{x \rightarrow \infty} \frac{2x^2-6}{(x-1)^2}$

17) $\lim_{x \rightarrow \infty} \frac{5x^3+1}{10x^3-3x^2+7}$

18) $\lim_{x \rightarrow -\infty} \left(\frac{1}{2}x - \frac{4}{x^2} \right)$

19) $\lim_{x \rightarrow -\infty} \left[\frac{x}{(x+1)^2} - 4 \right]$

20) $\lim_{x \rightarrow \infty} \left[7 + \frac{2x^2}{(x+3)^2} \right]$

21) $\lim_{t \rightarrow \infty} \frac{4t^2-2t+1}{3t^2+2t+2}$

22) $\lim_{x \rightarrow -\infty} \frac{2x^2-5x-12}{1-6x-8x^2}$

23) $\lim_{t \rightarrow \infty} \left(\frac{1}{3t^2} - \frac{5t}{t+2} \right)$

24) $\lim_{x \rightarrow \infty} \left[\frac{x}{2x+1} + \frac{3x^2}{(x-3)^2} \right]$

Answers

1) c

2) a

3) d

4) b

5) 1

6) -5

7) -1

8) $-\frac{5}{4}$

9) 2

10) -2

11) -3

12) $\frac{3}{4}$

13) DNE

14) DNE

15) $-\frac{4}{3}$

16) $-\frac{1}{4}$

17) $\frac{1}{2}$

18) DNE

19) -4

20) 9

21) $\frac{4}{3}$

22) $-\frac{1}{4}$

23) -5

24) $\frac{7}{2}$