

Limits Homework

Date _____

Evaluate each limit.

1) $\lim_{x \rightarrow -3} -\frac{x+3}{x^2+8x+15}$

2) $\lim_{x \rightarrow 4} \frac{x-4}{x^2-5x+4}$

3) $\lim_{x \rightarrow \infty} \frac{3x}{x-2}$

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

5) $\lim_{x \rightarrow \infty} \frac{2x}{x+3}$

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

7) $\lim_{x \rightarrow -1} f(x), f(x) = \begin{cases} -2, & x \leq -1 \\ -2x-4, & x > -1 \end{cases}$

8) $\lim_{x \rightarrow -2^+} f(x), f(x) = \begin{cases} x+5, & x < -2 \\ 2, & x \geq -2 \end{cases}$

9) $\lim_{x \rightarrow -1} f(x), f(x) = \begin{cases} 2x-3, & x \leq -1 \\ -2x+5, & x > -1 \end{cases}$

10) $\lim_{x \rightarrow 4^-} f(x), f(x) = \begin{cases} -2x+5, & x < 4 \\ -x^2+4x-3, & x \geq 4 \end{cases}$

11) $\lim_{x \rightarrow -4} f(x), f(x) = \begin{cases} -x^2-12x-37, & x < -4 \\ -5, & x \geq -4 \end{cases}$

12) $\lim_{x \rightarrow 1} \frac{\sqrt{x}-1}{x-1}$

$$13) \lim_{x \rightarrow 9} \frac{x-9}{\sqrt{x}-3}$$

$$14) \lim_{x \rightarrow 0} \frac{\frac{1}{1+x} - 1}{x}$$

$$15) \lim_{x \rightarrow 0} \frac{\frac{1}{-3+x} + \frac{1}{3}}{x}$$

$$16) \lim_{x \rightarrow 1} \frac{3x^2 - 4x + 1}{x^2 - 1}$$

$$17) \lim_{x \rightarrow -5} \left(-\frac{x^2}{2} - x + \frac{7}{2} \right)$$

$$18) \lim_{x \rightarrow -1} \frac{x-7}{x^2-2x}$$

$$19) \lim_{x \rightarrow 4} \frac{x+7}{x^2-16x+63}$$

$$20) \lim_{x \rightarrow 4} \frac{\sqrt{x}-2}{x-4}$$

$$21) \lim_{x \rightarrow 2} \frac{x-2}{x^2-x-2}$$

$$22) \lim_{x \rightarrow 3} -\frac{x-3}{x^2-7x+12}$$

$$23) \lim_{x \rightarrow 9} \frac{\sqrt{x}-3}{x-9}$$

$$24) \lim_{x \rightarrow -3} -\frac{x^2+x-6}{x+3}$$