

Limits Quiz Review

Evaluate each limit- **HINT: x values are going to infinity or negative infinity**

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

2) $\lim_{x \rightarrow \infty} (x^3 - 13x^2 + 56x - 80)$

Evaluate each limit. (**HINT- direct substitution**)

3) $\lim_{x \rightarrow 2} -\sqrt[3]{x-2}$

4) $\lim_{x \rightarrow 2} (-x^3 + 4x^2 - 2)$

Evaluate each limit. (**Hint- If direct substitution doesn't work, FACTOR**)

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

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

Evaluate each limit. (**Hint- If direct substitution doesn't work, use BUTTERFLY METHOD**)

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

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

Evaluate each limit. (**Hint- If direct substitution doesn't work, multiply by the CONJUGATE**)

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

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

Piecewise Functions- Evaluate each limit.

$$11) \lim_{x \rightarrow -2^-} f(x), f(x) = \begin{cases} -\frac{x}{2} + \frac{7}{2}, & x \leq -2 \\ 3, & x > -2 \end{cases}$$

$$12) \lim_{x \rightarrow 1^+} f(x), f(x) = \begin{cases} -\frac{x}{2} + 2, & x < 1 \\ -2x + 5, & x \geq 1 \end{cases}$$

Evaluate each limit.(Hint- use the table in your calculator)

$$13) \lim_{x \rightarrow -2^+} \frac{x+3}{x^2+4x+4}$$

$$14) \lim_{x \rightarrow 3^+} -\frac{4x}{x-3}$$

Evaluate each limit.

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

$$2) \lim_{x \rightarrow \infty} -\frac{x^2}{x^2+9}$$

$$3) \lim_{x \rightarrow 3^+} f(x), f(x) = \begin{cases} -\frac{x}{2} + \frac{5}{2}, & x < 3 \\ x+1, & x \geq 3 \end{cases}$$

$$4) \lim_{x \rightarrow -3} \frac{x^2+5x+6}{x+3}$$

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

$$6) \lim_{x \rightarrow -1} \frac{x}{\frac{1}{1+x} - 1}$$

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

$$8) \lim_{x \rightarrow 0^+} f(x), f(x) = \begin{cases} -2x-3, & x \leq 0 \\ -x^2-2x-2, & x > 0 \end{cases}$$

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

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

$$11) \lim_{x \rightarrow -1} (2x - 2)$$

$$12) \lim_{x \rightarrow -3} \frac{x^2 + x - 6}{x + 3}$$

$$13) \lim_{x \rightarrow -3^-} f(x), f(x) = \begin{cases} 2x + 5, & x \leq -3 \\ x + 3, & x > -3 \end{cases}$$

$$14) \lim_{x \rightarrow \infty} (x^2 - 6x + 10)$$

Evaluate each limit.

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

$$2) \lim_{x \rightarrow 0} \frac{x}{\frac{1}{2+x} - \frac{1}{2}}$$

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

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

$$5) \lim_{x \rightarrow 2} f(x), f(x) = \begin{cases} x^2 - 1, & x \neq 2 \\ 5, & x = 2 \end{cases}$$

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

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

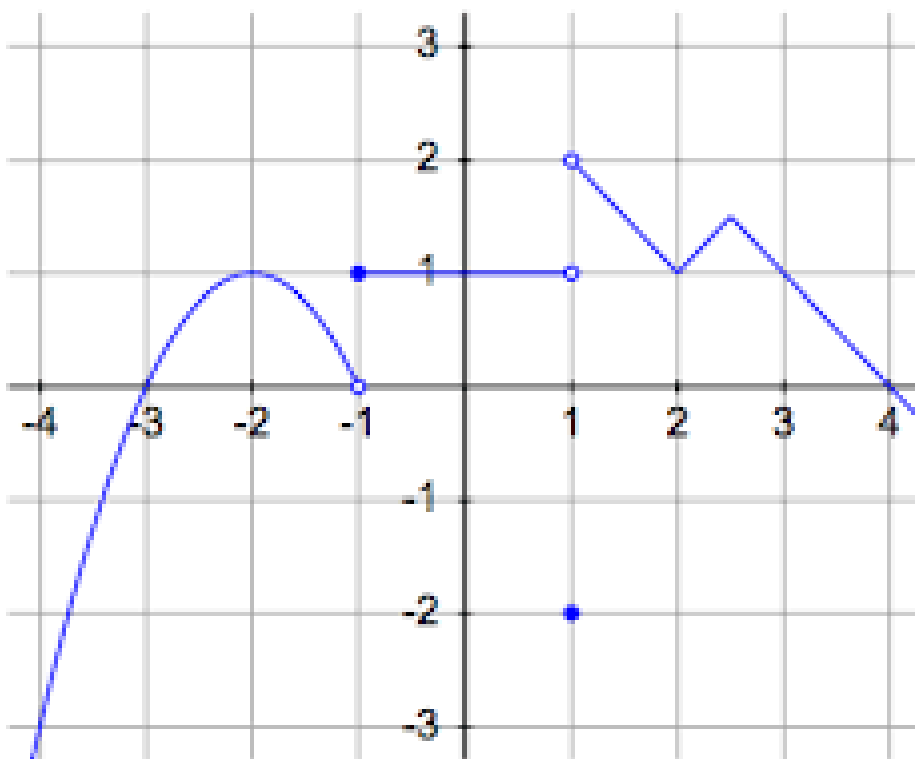
$$8) \lim_{x \rightarrow 3} f(x), f(x) = \begin{cases} x^2 - 8x + 13, & x \neq 3 \\ -1, & x = 3 \end{cases}$$

$$11) \lim_{x \rightarrow 3} \frac{\sqrt{x+1} - 2}{x-3}$$

$$12) \lim_{x \rightarrow 1} (x+3)$$

$$13) \lim_{x \rightarrow \infty} -\frac{x^2}{x^2-9}$$

$$14) \lim_{x \rightarrow 3^-} -\frac{2}{x-3}$$



Evaluate the following:

$$\lim_{x \rightarrow 2} f(x) =$$

$$\lim_{x \rightarrow 1^-} f(x) =$$

$$\lim_{x \rightarrow 1^+} f(x) =$$

$$f(1) =$$