

2.1 Evaluating Limits Review

Name: _____ Pd: _____

1. $\lim_{n \rightarrow 0} \frac{\frac{1}{n+8} - \frac{1}{8}}{n}$ _____

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

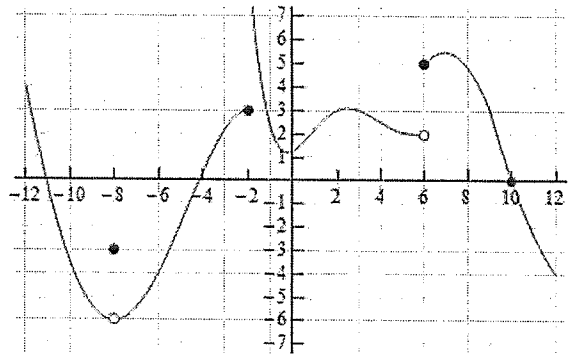
3. $\lim_{x \rightarrow -2} \frac{3x^2 + 5x - 2}{x + 2}$ _____

4. $\lim_{x \rightarrow 4} \frac{\sqrt{x+5} - 3}{x - 4}$ _____

5. $\lim_{x \rightarrow 0} \frac{-2 \sin 4x}{7x}$ _____

6. $\lim_{h \rightarrow 0} \frac{(x+h)^2 - 2(x+h) - 4 - (x^2 - 2x - 4)}{h}$ _____

Use the graph of $y = f(x)$ below to answer the following questions.



7. $\lim_{x \rightarrow 6} f(x)$ _____

8. $\lim_{x \rightarrow -8} (2f(x))$ _____

9. $\lim_{x \rightarrow -2^-} f(x)$ _____

10. $\lim_{x \rightarrow 0} [f(x) - 4]$ _____

11. $\lim_{x \rightarrow 10} f(x)$ _____

12. Let $g(x) = \frac{2x^2 + 19x + 24}{x^2 + 7x - 8}$ _____

a. Evaluate $\lim_{x \rightarrow -8} g(x)$

b. What does your answer from part a tell you about $g(x)$ at $x = -8$? (Graphically)

13 – 14 True or False. If true explain why. If false explain why or give a counter example.

13. If f is undefined at $x = c$, then the limit of $f(x)$ as x approaches c does not exist.

14. $\lim_{x \rightarrow 2} f(x) = 3$, where $f(x) = \begin{cases} 2x - 1, & x < 2 \\ 5, & x = 2 \\ 3x^2 - 4x - 1, & x > 2 \end{cases}$

15. Sketch the graph of a function f that satisfies the following conditions.

$$f(-1) = 3, \quad \lim_{x \rightarrow -1} f(x) = DNE, \quad f(3) = 1, \quad \lim_{x \rightarrow 3} f(x) = -2$$

Practice Problems

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

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

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

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

5) $\lim_{x \rightarrow -\infty} (x^3 - 4x^2 + 5) =$ _____

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

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

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

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

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

11) $\lim_{x \rightarrow \infty} \left(-\frac{\ln x}{x^4} + 1 \right) =$ _____

12) $\lim_{x \rightarrow \infty} (-e^{-3x} - 1) =$ _____

