

Calculus I

Name: _____

Study Guide 3

Class: _____

Due Date: _____

Score: _____

No Work \Leftrightarrow No Points

Use Pencil Only \Leftrightarrow Be Neat & Organized

1. (4 points) For any given $\epsilon > 0$, find $\delta > 0$ such that $\lim_{x \rightarrow 4} (2x - 1) = 7$.

1. _____

2. (4 points) For any given $\epsilon > 0$, find $\delta > 0$ such that $\lim_{x \rightarrow 5} (3x + 2) = 17$.

2. _____

3. (5 points) For any given $\epsilon > 0$, find $\delta > 0$ such that $\lim_{x \rightarrow 1} x^2 = 1$.

3. _____

4. (4 points) Find $\lim_{x \rightarrow a} f(x)$ and $\lim_{x \rightarrow a} g(x)$ if

$$\begin{cases} \lim_{x \rightarrow a} [f(x) - g(x)] = 10 \\ \lim_{x \rightarrow a} [f(x) + g(x)] = -2 \end{cases}$$

4. _____

5. (4 points) Find and simplify the difference quotient for $f(x) = \sqrt{x}$, and then evaluate for $h = 0$.

5. _____

6. (4 points) Evaluate $\lim_{x \rightarrow 0} f(x)$ if $1 - \frac{x^2}{4} \leq f(x) \leq 1 + \frac{x^2}{2}$ for all $x \in \mathbb{R}$.

6. _____

7. (4 points) For any given $\epsilon > 0$, find $\delta > 0$ such that $\lim_{x \rightarrow -3} (-5x - 13) = 2$.

7. _____

8. (4 points) For any given $\epsilon > 0$, find $\delta > 0$ such that $\lim_{x \rightarrow 0} \sqrt[3]{x} = 0$.

8. _____

9. (4 points) For any given $\epsilon > 0$, find $\delta > 0$ such that $\lim_{x \rightarrow 2} (x^2 - 4x) = -4$.

9. _____

10. (4 points) Evaluate $\lim_{x \rightarrow a} \frac{x^3 - ax^2}{x^2 - a^2}$.

10. _____

11. (4 points) Evaluate $\lim_{x \rightarrow 0} \frac{\sqrt{2+3x} - \sqrt{2-3x}}{x}$.

11. _____

12. (5 points) Evaluate $\lim_{h \rightarrow 0} \frac{f(x+h) - f(x)}{h}$ for $f(x) = \frac{1}{x^2}$.

12. _____