Name: _____

Class: _____

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 $\lim\limits_{x \to 4} \left(\dfrac{1}{4}x - 1 \right) = 0.$

1. _____

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

2. _____

3. (5 points) For any given $\epsilon > 0$, find $0 < \delta \leq 1$ such that $\lim\limits_{x \to 1} \sqrt{x} = 1.$

3. _____

4. (4 points) Find $\lim\limits_{x \to a} f(x)$ and $\lim\limits_{x \to a} g(x)$ if

$$\begin{cases} \lim\limits_{x \to a} [3f(x) - 2g(x)] = 11 \\ \lim\limits_{x \to a} [2f(x) + 3g(x)] = 3 \end{cases}$$

4. _____

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

5. _____

6. (4 points) Evaluate $\lim\limits_{x \to 0} f(x)$ if $1 - x^2 \leq f(x) \leq \cos x$ for all $x \in (-\pi/2, \pi/2)$.

6. _____

7. (4 points) For any given $\epsilon > 0$, find $\delta > 0$ such that $\lim\limits_{x \to -3} (|x| - 4) = -1.$

7. _____

8. (4 points) For any given $\epsilon > 0$, find $\delta > 0$ such that $\lim\limits_{x \to 0} \sqrt[5]{x} = 0.$

8. _____

9. (4 points) For any given $\epsilon > 0$, find $\delta > 0$ such that $\lim\limits_{x \to -3} (x^2 + 6x) = -9.$

9. _____

10. (4 points) Evaluate $\lim\limits_{x \to a} \dfrac{x^4 - a^4}{x^2 - a^2}$.

10. _____

11. (4 points) Evaluate $\lim\limits_{x \to 0} \dfrac{x}{\sqrt{3 + 2x} - \sqrt{3 - 2x}}$.

11. _____

12. (5 points) Evaluate $\lim\limits_{h \to 0} \dfrac{f(x + h) - f(x)}{h}$ for $f(x) = \dfrac{1}{x}$.

12. _____