Term 172 Quiz#4 Math 101

Full Name: ID#

Q1. **Using** the $\varepsilon - \delta$ definition, prove the statement $\lim_{x \to -4} (1 - 3x) = 13$.

Q2. Find real $\alpha$ such that $f(x) = \begin{cases} \alpha^4 - 2x^2 & if\ x \leq 1 \\ x - 2\alpha^2 & if\ x > 1 \end{cases}$ is continuous.

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Q3. Use the limits to find all horizontal asymptotes to the curve of the function:

$$f(x) = \sqrt{9x^2 + 2x} - \sqrt{9x^2 + 5x}$$