Math 248 Group Quiz 2

Names: _____

1. Let $f(x)$ be a real valued function and $a, L \in \mathbb{R}$. We say that $\lim_{x \to a} f(x) = L$ if for every $\varepsilon > 0$ there is a $\delta > 0$ such that $|x - a| < \delta$ implies $|f(x) - L| < \varepsilon$. Negate this definition; that is, define $\lim_{x \to a} f(x) \neq L$.

2. Let $a, b \in \mathbb{Z}$. Prove that if $a \mid b$, then $a^2 \mid b^2$.

3. Let $a, b \in \mathbb{Z}$. Prove that if $a^2 = 2b^2$, then a is even and b is even.

4. Let $x \in \mathbb{R}$. Prove that if $x > 0$, then $x + \dfrac{1}{x} \geq 2$.