Math 141 Group Quiz 1

Names: _____

1. Let $f(x) = \dfrac{|x|}{x}$. Explain why $\left(\lim_{x \to 0} f(x) \cdot f(x) \right) \neq \left(\lim_{x \to 0} f(x) \right) \left(\lim_{x \to 0} f(x) \right)$.

2. Give an example of functions $f(x)$ and $g(x)$ such that $\lim_{x \to 0} (f(x) + g(x)) \neq \left(\lim_{x \to 0} f(x) \right) + \left(\lim_{x \to 0} g(x) \right)$.

3. You drive from A to B at 30 mph, and return the same route at 60 mph. What is your overall average speed?

4. The trip from A to B is 90 miles. You cover the first 30 miles at 30 mph. What speed must you drive the remaining 60 miles to average 50 mph for the whole trip?

5. It takes one hour for you to drive 60 miles. Must there have been an instant in time when you were going exactly 60 miles per hour? Why or why not?