Math 181 Honors Quiz 6 Version A

1. State the definition of the derivative $f'(x)$ of the function $f(x)$ in terms of limits.

2. Suppose $f(x)$ and $g(x)$ are differentiable functions. Let $w(x) = f(x)g(x)$. Show that $w'(x) = f(x)g'(x) + f'(x)g(x)$.

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3. Let $f(x) = x^2$. Use the limit-definition of derivative to show that $f'(x) = 2x$.

4. Let $f(x) = \sqrt{x}$. Use δ and ϵ to show that $f(x)$ is continuous at $c = 5$.