

Math 325. Quiz #11

- (1) State the definition for the **derivative** of the function $g(x)$ at some real number r .
- (2) TRUE OR FALSE, and *justify* with a short proof or example:
If $f(x)$ is continuous on the closed interval $[-1, 1]$ and f achieves its maximum at $c \in [-1, 1]$, then $f'(c) = 0$.
- (3) TRUE OR FALSE, and *justify* with a short proof or example:
If $f(x)$ is not differentiable at $x = 2$, then $g(x) = f(2x)$ is not differentiable at $x = 1$.

Bonus: Let $p(x)$ be a continuous function on \mathbb{R} with $p'(0) = -2$ and $p'(1) = 3$. Show that there are real numbers a, b such that $0 < a < b < 1$ with $p(a) = p(b)$.