MAT 371 Homework 6
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1. Let $f: (a, b) \to \mathbb{R}$ be continuous. Suppose $f$ has a maximum. Prove that $f$ is not 1-1.

2. Let $f: \mathbb{R} \to \mathbb{R}$, and let $A \subseteq \mathbb{R}$. Suppose that the restriction $f \mid A$ is continuous,
   
   (a) Give an example where $f$ is not continuous on $A$.
   
   (b) Prove that if $A = (0,1)$, then $f$ is continuous on $A$.

3. (a) Prove that if $f, g: A \to \mathbb{R}$ are uniformly continuous, then $f + g$ is also uniformly continuous.
   
   (b) Give an example where $fg$ is not uniformly continuous.