| MA 125-06 <br> §3.2-3.3, IVT | QuiZ \#5 |  | Name: |
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1. Prove: If $f(x)$ and $g(x)$ are differentiable functions, then $\frac{d}{d x}(f(x)+g(x))=f^{\prime}(x)+$ $g^{\prime}(x)$. (7 points)
2. Let $f(x)=x^{4}-4 x^{3}+2$. Can you use the Intermediate Value Theorem to show that $f(x)$ has a root in the interval $(0,1)$ ? If so, fully explain how you would do this. If not, explain why not. (7 points)
3. Let $f(x)=e^{x} \sin x$. Calculate $f^{\prime}(x)$ and $f^{\prime \prime}(x)$ by hand (show the details). You may check the answers using your calculator. (6 points)
