Calculus I, Fall 2015

Quiz 1

Oct 06, 2015

Show all details.

1. Give formal definition of $\lim_{x\to c} f(x) \neq L$ (just the definition, need not find ϵ or δ, etc.).
2. Find $\lim_{\theta\to 0} \dfrac{\sin(1-\cos\theta)}{\tan^2\theta}$.
3. State the Intermediate Value Theorem (Need not prove). Use it to show that $x^x = 2$ has a root.
4. Give formal definition of '$y = f(x)$ is continuous at $x = c$' in terms of ϵ and δ. Then use the $\epsilon - \delta$ argument to show that if both $f(x)$ and $g(x)$ are continuous at $x = c$, then so is $f(x) + g(x)$.
5. Give formal definitions of the following limits (Just the definition, need not find δ).

$$(a)\ \lim_{x\to c^-} f(x) = L \qquad\qquad (b)\ \lim_{x\to -\infty} f(x) = \infty$$

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