Quiz 2

Oct 31 2002, 10:10 AM - 11:00 AM

(1) (20 pts) Write down the definition of

$$\lim_{x \to 1/2} \frac{1}{x} = 2$$

in terms of ϵ and δ (need not prove it). Then find a δ that works for $\epsilon = 0.01$ (need not be the best δ).

(2) (20 pts) State the Intermediate Value Theorem. Use it to locate a root of $x = \cos x$ on a interval of length 1. That is, find a c such that there is a root on $(c, c+1)$.

(3) (15 pts each) Calculate the following:

(a) $\frac{d^2}{dx^2}(x^2 \sin x)$

(b) $\frac{d}{dx}(\frac{1+\csc x}{1-\csc x})$

(c) $\frac{d}{dx} \sin(\cos(x^2 - 5))$

(d) $\frac{d^{100}}{dx^{100}} \cos(2x)$