

Calculus I TA Session

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1. **IVT**

Show that if $f : [0, 1] \rightarrow [0, 1]$ is continuous, then there is some c such that $f(c) = c$.

2. **(Definition of Derivatives and Derivatives) 11001 (13-16) Midterm Problem 2**

$$\text{Let } f(x) = \begin{cases} |x| \cos\left(\frac{1}{x}\right) & \text{if } x \neq 0 \\ 0 & \text{if } x = 0 \end{cases}$$

- (a) Determine whether $f(x)$ is continuous at $x = 0$. Explain your answer.
- (b) Determine whether $f(x)$ is differentiable at $x = 0$. Explain your answer.