

## Math 325. Group Quiz #10d

(1) State the *Intermediate Value Theorem*.

(2) TRUE OR FALSE, and *justify*:  
The function

$$f(x) = \begin{cases} x & \text{if } x \geq 0 \\ -x - x^2 & \text{if } x < 0 \end{cases}$$

is differentiable at  $x = 0$ .

(3) TRUE OR FALSE, and *justify* with a short proof or example:

There is a continuous function  $f : [1, 3] \rightarrow \mathbb{R}$  with range  $[-5, -3] \cup [-1, 2]$ .