EXERCISES OF WEEK SIX

Exercise 1. Let $g\colon [c,d] \to [a,b]$ be a continuous function such that

$$\{g(c), g(d)\} = \{a, b\}.$$

Then g is surjective.

Exercise 2. Let g be the function defined below

$$g(x,y) = \begin{cases} \frac{xy}{x-y} & \text{if } x \neq y \\ 0 & \text{if } x = y \end{cases}$$

State whether g is continuous at O. Do all the directional derivatives exist at O?

Date: 2013, October 8.