ADVANCED CALCULUS, Math 127 B
Homework 7 Due March 12

1. If $f(0,0) = 0$ and $f(x,y) = \frac{xy}{x^2+y^2}$ otherwise. Prove that the partial derivatives with respect to x and y exist at every point, although f is not continuous at $(0,0)$.

2. If f is a differentiable mapping of a connected set $E \subset R^n$ and if f has a local maximum at a point $x \in E$, prove that $f'(x) = 0$.

3. 6.13, 6.20, 6.24