

**PSET 5 - DUE MARCH 10**

1. 8.14:10 (6 points)
2. 8.17:6 - also prove  $f$  is not differentiable at  $(0, 0)$ . (6 points)
3. 8.17:10 (6 points)
4. Let  $f : \mathbb{R}^n \rightarrow \mathbb{R}^m$  such that the inverse image of every open set is open. Prove  $f$  is continuous. (6 points)
5. Let  $f : \mathbb{R}^n \rightarrow \mathbb{R}$  be a linear transformation. Prove that  $T_{\mathbf{a}} = f$  for all  $\mathbf{a} \in \mathbb{R}^n$ . (6 points)

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