

PSET 4 - DUE MARCH 3

1. B.63:3. First prove that $f(t)$ is continuous on $[0, 1]$. Then solve the stated problem. (6 pts)
2. 14.13:21 (5 pts)
3. 14.15:11 (5 pts)
4. Let $\mathbf{f} : \mathbb{R}^n \rightarrow \mathbb{R}^m$ be continuous. Prove the inverse image of any open set is open. That is, let $U \subset \mathbb{R}^m$ be open. Prove that $\mathbf{f}^{-1}(U) = \{x \in \mathbb{R}^n \mid \mathbf{f}(x) \in U\}$ is open. (Using ϵ, δ arguments will be helpful.) (6 pts)
5. 8.5:2,4 (8 pts)

The problems from Chapter 14 refer to Apostol Volume I.

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