Assignment-3

1. Let M be a compact smooth manifold of dimension n and $f: M \to \mathbb{R}^n$ a smooth map. Prove that $Df(p)$ cannot be 1-1 for _all_ $p \in M$.

(1)

2. Let M be a smooth manifold, $X \in \mathcal{X}(M)$. Let $\gamma(t)$ be an integral curve of X. Suppose that $\dot{\gamma}(t_0) = 0$ for some t_0. Prove that γ must be a constant map, i.e. the image of γ is a single point.

(1)