Differentiable Manifolds: Problem set 8

Due Monday October 27

Read GP §2.4, 3.1 and 3.2. (You should also read 2.5-2.6 for fun!) Do problems: §2.4: 4, 5 (assume $dim(X) > 0$), 6, 15 (see 14), 18. §3.2: 2, 6.

1. Prove that $\mathbb{CP}^1 \subset \mathbb{CP}^2$ is not cut out by independent smooth functions on any neighborhood of $\mathbb{CP}^1$. That is, prove that there is no smooth map $f : U \to \mathbb{R}^2$ defined on an open set $U \subset \mathbb{CP}^2$ so that 0 is a regular value and $f^{-1}(0) = \mathbb{CP}^1$.