Homework for 651

Problems due April 5, 2007

1. Problem 1, page 176, in Hatcher.


3. Problem 1, page 184, in Hatcher.


5. Suppose that $f : S^2 \rightarrow \mathbb{R}^3$ is a smooth immersion (locally a diffeomorphism), where all the singularities are transverse (locally the intersection of distinct 2-dimensional planes), there are only double points ($f^{-1}(y)$ is at most two points for all $y \in \mathbb{R}^3$), and $S^2$ is a closed 2-manifold. Calculate the Euler characteristic $\chi(f(S^2))$ in terms of $\chi(S^2)$. 