Problem Set #4  
Due: Wednesday, Feb. 8

1. Prove that if $f_1, f_2 \in \Omega(X, p)$, $\phi \in C^0(X, Y)$ and $f_1 \sim f_2$ then $\phi \circ f_1 \sim \phi \circ f_2$.

2. Let $X = [0, 1] \times [0, 1]$ denote the rectangle in $\mathbb{R}^2$. Let $\sim$ be the equivalent relation generated by $(0, p) \sim (1, 1 - p)$ where $0 \leq p \leq 1$. The quotient space $X/\sim$ is called the M"obius band. Show that $S^1$ is a retract of the M"obius band.

3. Do problem 7-2 on page 176 of the textbook.