Math 461: Topology, Fall 2009 Quiz # 4, September 30

Name: .....

Let (X, d_X) and (Y, d_Y) be metric spaces, and let $f : X \to Y$ be a function.

1] Write down the ε-δ definition of continuity of f.

2] Prove one implication of the following if-and-only-if statement.

Proposition. $f : X \to Y$ is continuous if and only if for any open subset U of Y, $f^{-1}(U)$ is open in X.