Name: _____ Score (Out of 7 points):

1. (7 points) Let $f : X \to Y$ be a function of topological spaces. Recall that the *graph* of f is defined to be the subset of $X \times Y$

$$\{ (x, f(x)) \in X \times Y \mid x \in X \}.$$

Suppose that Y is Hausdorff. Show that, if f is continuous, then the graph of f is a closed subset of $X \times Y$ with respect to the product topology on $X \times Y$.