Homework #2 - To be handed in no later than 2:41 p.m., Monday, May 22

1. Let X be the plane and let **B** be the collection of all circles centered at the origin, including the origin itself—that is, the circle of radius 0. Show that **B** is a base for a topology on X, and find the closure and the interior of the square

$$S = \{(x,y): -1 \le x \le 1,\ -1 \le y \le 1\}.$$

2. Let (X,d) be a pseudometric space. Show there is a pseudometric ρ on X that is equivalent to d and has the property that there is a real number M such that $\rho(x,y) < M$ for all x and y in X.