KTH Matematik

5B1456, Matrix Algebra
Assignment 7
due Nov. 8, 2004

(1) Let X be a topological space. Show that:
  (a) If X is irreducible then every open subset is dense.
  (b) $Y \subset X$ irreducible if anf only if $\overline{Y}$ is irreducible.
  (c) Let Y be a topological space and $f : X \to Y$ be a continuous map. Show that the image of an irreducible subspace is irreducible.

The following proves that a topological space is Noetherian if and only if it is universally compact.

(2) Let X be a topological space. Show that the following statements are quivalent:
  (a) X is Noetherian.
  (b) Every open $Y \subseteq X$ is compact.
  (c) Every subspace $Y \subseteq X$ is compact.