Math 413 Analysis I
Problem Set 6

Due Friday October 3

Do the following problems from Abbott's *Understanding Analysis*.
Exercise 3.2.3
Exercise 3.2.9
Exercise 3.2.12

1) If $A \subseteq \mathbb{R}$, then $x \in A$ is an *interior point* of A if $V_\epsilon(a) \subseteq A$ for some $\epsilon > 0$. Let A° be the set of interior points of A. We call A° the *interior* of A.

a) Prove that A° is open.

b) Suppose O is open and $O \subseteq A$. Prove that $O \subseteq A^\circ$. Thus A° is the largest open subset A.

c) Prove that

$$(A^\circ)^c = \overline{A^c}.$$

[Recall: B^c is the complement of B, that is $B^c = \{a \in \mathbb{R} : a \notin B\}$.]