This miniproject asks you to investigate the concept of *fuzzy sets*. First, read the definition of a Fuzzy set and the problems about them, numbers 61–63.

(a) Prove that for regular sets, $A \cap A' = \emptyset$.

(b) Show that for Fuzzy sets, $A \cap A' \neq \emptyset$.

(c) Prove that for regular sets, $A \cup A' = U$, where U is the universal set.

(d) Show that for Fuzzy sets, $A \cup A' \neq U$.

(e) What is the range of possible degrees of membership in $A \cap A'$ for Fuzzy sets? Briefly explain.

(f) What is the range of possible degrees of membership in $A \cup A'$ for Fuzzy sets? Briefly explain.