(1) Show that interior of any set is an open set.
(2) finish the proof of the following statement from class. For any set $A \subset R^n$ we have

$$R^n = int(A) \cup ext(A) \cup \partial(A)$$

and none of the three sets $int(A), ext(A), \partial(A)$ intersect.
(3) show that

$$(\sum_{i=1}^{n} x_i y_i)^2 \leq (\sum_{i=1}^{n} x_i^2)(\sum_{i=1}^{n} y_i^2)$$

using the same method as was used in class to prove it for n=2.
(4) Show that a set $A \subset R^n$ is closed if and only if it contains all its boundary points.
(5) construct a closed Cantor set $A \subset [0,1]$ of positive measure.

Extra Credit Problem (to be written up and submitted separately)

Suppose $v_1, \dots v_{k+1}$ are nonzero vectors in R^n such that $\angle v_i v_j > \pi/2$ for any $i \neq j$.

Show that $v_1, \dots v_k$ are linearly independent.