Quiz 1. September 7, 2007.

MATH 111: Introduction to Probability.

[2 pts.] 1. Make a Venn diagram of the sets X, Y, and Z (assume there are members in every intersection, that is, they all overlap). Shade the region corresponding to $X \cup (Y \cap Z^c)$.

[3 pts.] 2. Let U denote the set of all senators in Congress. Let,

$$\begin{aligned} D &= \{x \in U \mid x \text{ is a Democrat}\} \\ F &= \{x \in U \mid x \text{ is a female}\} \\ L &= \{x \in U \mid x \text{ is a lawyer}\} \end{aligned}$$

Using $\cup$, $\cap$, and ^{c} notation, represent the following sets:

The set of all Democrats who are female or are not lawyers

The set of all senators who are male Democrats or are lawyers

[3 pts.] 3. (a) In a survey of 200 households regarding the ownership of HDTVs and low-definition TVs, the following information was obtained:

170 households own only a low-definition TV.
40 households own only an HDTV.
10 households own don't have a TV.

How many households own both an HDTV and a low-definition TV?

[2 pts.] (b) Draw a Venn diagram representing the two sets. Within each region of the Venn diagram, write the number of elements *just* in that region.