Math H110   Professor K. Ribet

• Here is the problem that I mentioned in class on November 12: Let $H\colon V \times V \to F$ be a bilinear form. Suppose that V is a *finite-dimensional* F-vector space. Show that the following two conditions are equivalent: (1) for each $x \in V$, there is a $y \in V$ for which $H(x, y)$ is non-zero; (2) for each $y \in V$, there is an $x \in V$ for which $H(x, y)$ is non-zero.

• §6.5: 20

• §6.6: 5, 6, 8, 9, 10