

Homework II**Due: January 27, 2009**

1. Let $S = \{101101, 010111, 111010, 110110\}$ be a subset of \mathbb{K}^6 generating the linear binary block code C .
 - a. Find a generator matrix G .
 - b. Use some elementary matrices to obtain a generator matrix G_1 in standard form.
 - c. Find a parity-check matrix associated to G_1 .
 - d. Is C a self-dual code?
 - e. The following words were received:

111111, 001100, 110011, 100101, 101110;

which ones are codewords? Explain all the reasons.

2. Find a generator matrix of a self dual code of rank 5.
3. Define a $(7, 4, 3)$ binary linear code C (i.e., $C \subset \mathbb{K}^7$ of rank 4 and distance 3).

Warning. In problem 2 or 3, if two students produce the same code, then both will get zero.