

EE241 SPRING 2015: TUTORIAL #10

Friday, April 3, 2015

PROBLEM 1 (Linear independence): Which of the following sets are linearly independent?

- (a) $\{0, 0, 0, 0, 0, 0\}$
- (b) $\{0, 1, 2, 3, 4, 5\}$
- (c) $\{[1, 1], [1, -1]\}$
- (d) $\{[2, 5, 4], [3, 4, 5], [6, 4, 3], [1, 0, 0]\}$
- (e) $\{[12, -11, 7, -8], [8, -12, 0, -10], [-4, -3, -9, -4]\}$

PROBLEM 2 (Nullspace bound): Write a lower bound for the dimension of the nullspace of a $m \times n$ matrix where $m \leq n$.

PROBLEM 3 (From practice midterm 2): Consider the space P_3 of all polynomials of degree less than or equal to 3, and the following set of polynomials:

$$S = \{p_1(t) = t^3/6 + t^2/2 + t + 1, p_2(t) = t^2/2 + t + 1, p_3(t) = t + 1, p_4(t) = 1\}.$$

Show that S is a basis for P_3 .