EE 2030 Linear Algebra — Chi-chao Chao
Spring 2010

Homework Assignment No. 2
Due 11:10am, March 26, 2010

`Reading:` Strang, Sections 3.1–3.4.

`Problems for Solution:`

1. Do Problem 18 in Problem Set 3.1 (p. 129) of Strang. In this problem, $\boldsymbol{M}$ is the vector space of all real 2×2 matrices. If the statement is true, prove it; otherwise, find a counterexample.

2. Problem 22 in Problem Set 3.1 (p. 130) of Strang.

3. Find the nullspaces of matrices $\boldsymbol{A}$ and $\boldsymbol{B}$ described in Problem 1 in Problem Set 3.2 (p. 140) of Strang.

4. Problem 37 in Problem Set 3.2 (p. 143) of Strang.

5. Do Problem 10 in Problem Set 3.3 (p. 152) of Strang. Also find the nullspace matrix $\boldsymbol{N}$ (containing the special solutions) for the two matrices.

6. Problem 24 in Problem Set 3.3 (p. 154) of Strang.

7. Find the complete solution to:

$$\begin{bmatrix} 1 & 3 & 3 & 2 \\ 2 & 6 & 9 & 5 \\ -1 & -3 & 3 & 0 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \\ x_4 \end{bmatrix} = \begin{bmatrix} 1 \\ 5 \\ 5 \end{bmatrix}.$$

8. Problem 34 in Problem Set 3.4 (p. 167) of Strang.