

## MATH 3110 - Spring 2014

### Homework 4

Due: Feb. 20th (Thursday)

#### Questions. Chapter 3 of Strang

(total of 10 marks)

1. Find all  $2 \times 2$  real matrices  $A$  such that  $A^2 = I$ . (2 marks)
2. (a) Write the  $3 \times 7$  matrix in rref with the largest number of 1 as entries. (1 marks)  
(b) Write the  $3 \times 7$  matrix in rref with the largest amount of 1 as entries and pivot columns 2 and 4. (1 marks)
3. Find a basis for the spaces  $C(A)$ ,  $N(A)$ ,  $R(A)$  and  $N(A^T)$  for (6 marks)

$$A = \begin{pmatrix} 1 & 0 & 1 & 1 & 0 & 1 & 1 \\ 1 & 1 & 2 & 2 & 0 & 2 & 2 \\ 1 & 1 & 3 & 3 & 1 & 3 & 3 \\ 1 & 1 & 3 & 3 & 1 & 3 & 3 \\ 1 & 1 & 3 & 3 & 1 & 3 & 3 \end{pmatrix}.$$

(From Chapter 3.6)