

### MATHEMATICS 2270. Homework # 3.

For each matrix  $A$  in the problems (1) and (2) find vectors which span the kernel of  $A$ :

1.

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

2.

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

For each matrix  $A$  in the problems (3) and (4) find vectors which span the image of  $A$ . Give as few vectors as possible:

3.

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

4.

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

5. §2.3, # 10.

6. Using row echelon form reduction find the inverse matrix  $A^{-1}$  for

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