

## Mathematics 22a Homework Problems 2

The following problems are due on **Monday, October 5**.

1. B & S p. 48, problem 1.9.
2. B & S p. 48, problem 1.7.
3. B & S p. 48, problem 1.11.
4. Show that if a lin. transform.  $f : V \rightarrow W$  is onto, and  $S$  is a set of vectors in  $V$  spanning  $V$ , then  $f(S)$  spans  $W$ .
5. (i) Show that if  $N$  is a  $2 \times 2$  matrix with determinant and trace equal to zero, then  $N^2 = 0$ . (ii) Show that if  $N$  is a  $2 \times 2$  matrix with determinant zero and trace equal to one, then  $P^2 = P$ . (iii) Show that the image and the kernel of an lt are subspaces.