

## 4570 Test 2 Study Guide

Test 2 covers HW 3 and HW 4.

### Computations:

- Given  $T : V \rightarrow W$ , determine if  $T$  is a linear transformation. If  $T$  is a linear transformation then (i) find a basis for  $N(T)$ , (ii) compute the nullity of  $T$ , (iii) determine if  $T$  is one-to-one, (iv) compute the rank of  $T$ , (v) is  $T$  onto?, (vi) compute the range of  $T$ .

See 4570 HW 3 - # 2.

See 2550 HW 9 - # 1.

- Find the coordinates of a vector with respect to a basis.  
Find the matrix of a linear transformation with respect to two bases.  
Find the change of coordinate/basis matrix between two bases.

See 4570 HW 4 - # 1

See 2550 HW 9 - # 3, 4, 5, 6, 7, 8

See 2550 HW 7 (Part 1) – 9(b,c), 10(b,c), 11

### Proofs:

For the proofs below, do the **red** ones first. That is, give them priority.

- Proofs involving linear transformations.  
See 4570 HW 3 - # **1(a)**, 1(b), 1(c), **5, 6, 7**
- Proofs involving linear transformations and the matrix of a linear transformation.  
See 4570 HW 4 - # **2, 3(a)**, 3(b), **4, 5**,