Linear Algebra
MATH 224W – Spring 2015

Week 12: Rank, nullity, and linear transformations

Homework #11 **due Thursday, Nov. 12**

§4.8 #2, 4, 8, 12, 15(a,b,c,e), 17(a,b,c), 23

§4.7 #10, 12
For #10, 12 in §4.7 and #10 in §4.9, you can use a computer (http://www.wolframalpha.com is one option) to perform your row reduction as long as you clearly state what you have done.

§4.9 #10

Writing Assignment #11 **due Monday, Nov. 16**

§4.6 #39, 40
For #39, it might be helpful to argue by contradiction and use the Building Up Theorem (Theorem 4.11); alternatively, Theorem 4.10 could be used. Similar advice applies to #40, but consider using the Trimming Down Theorem (Theorem 4.9).

§4.9 #45

AP #1 Let A be an $m \times 3$ matrix (for arbitrary $m \geq 1$). Assume that $A\mathbf{v} = A\mathbf{w} = \mathbf{0}$ for

$$\mathbf{v} = \begin{bmatrix} 1 \\ \pi \\ 1 \end{bmatrix} \text{ and } \mathbf{w} = \begin{bmatrix} 1 \\ 1 \\ 1 \end{bmatrix}.$$

Prove that $\text{rank}(A) \leq 1$.