Instructions

1. The statements in Italics are for introducing results and notations that may be used again in this course. You are only required to read and think about them.

2. To receive full credit you must explain how you got your answer.

3. While I encourage collaboration, you must write solutions IN YOUR OWN WORDS. DO NOT SHARE COMPLETE SOLUTIONS before they are due. YOU WILL RECEIVE NO CREDIT if you are found to have copied from whatever source or let others copy your solutions.

4. Workshops must be handwritten (electronic handwriting is allowed) for authentication purposes and submitted on Canvas. Please do NOT include any personal information such as your name and netID in your file. Late homework will NOT be accepted. It is your responsibility to MAKE SURE THAT YOUR SUBMISSIONS ARE SUCCESSFUL AND YOUR FILES ARE LEGIBLE AND COMPLETE. It is also your responsibility that whoever reads your work will understand and enjoy it. Up to 1 point out of 10 may be taken off if your solutions are hard to read or poorly presented.

Workshop 9

1. Show that for each elementary row operation, there is an elementary row operation that cancels out its effect if we apply it before or after. Use this to show that all elementary matrices are invertible. *This together with workshop 4 problem 4 imply that products of elementary matrices are invertible. Later we will see that every invertible matrix is a product of elementary matrices.*

2. We continue with the last example from the lecture.

a. Find a basis for $K(T)$. What's the dimension of $K(T)$?

b. Compute $R(T)$.

c. Are the row vectors of the original matrix linearly dependent or linearly independent? What about the column vectors?