Linear Algebra
MATH 224W – Spring 2016

Week 7: Determinants

Writing Assignment #6 **due ~~Monday, Feb. 29~~ due Thursday, Mar. 3**

§3.2 #10, 11, 15(a)
Aim for short, concise proofs.

AP #1 Prove that if $A \in M_{n\times n}$ and every entry of A is a rational number, then $\det A$ is also a rational number. *Hint: try using the **definition** of the determinant. It is quite possible that your proof will be very short.*

AP #2 Let n be an positive *odd* integer. Prove that if $A \in M_{n\times n}$ and $A^2 = 2I_n$, then some entry in A is an irrational number.

Homework #6 **due ~~Thursday, Mar. 3~~ Friday, Mar. 4**

§3.1 #12(c)

§3.2 #2(c-f), 3, 4, 8, 9, 24(a), 26(b)
For #2, 8, and 9 make sure to cite any results you use.

§3.3 #4, 12

AP #1 Compute the following determinants using cofactor expansion (Theorem 3.10). *Hint: start your expansion along a row or column that has many zero entries.*

(a)
$$\begin{vmatrix} 1 & 0 & 3 & 0 \\ 2 & 1 & -4 & -1 \\ 3 & 2 & 4 & 0 \\ 0 & 3 & -1 & 0 \end{vmatrix}$$

(b)
$$\begin{vmatrix} -1 & 0 & 0 & -2 \\ 5 & 6 & 7 & 8 \\ 0 & -7 & 0 & 0 \\ 0 & 3 & -1 & 5 \end{vmatrix}$$