Last class: Wed 9-10 here. (OH 3-4)
Last week’s schedule on web.
Course evals: 47/112. Warn the unsuspecting?

Goal: \(|a_{ij}| = a_{jj} \quad |a_{ii} \ldots \ldots a_{nn}| = \sum_{i=1}^{n} (-1)^{i+j} a_{jj} A_{jj}\)
satisfies

\(|E_{i,j} A| = -|A| \quad |E_{i,c} A| = c |A| \quad |E_{i,j} A| = |A|\)

1. Linear in the first row.
   Pf. “\(a_{ij}\)” is linear in first row, and a lin. comp. of lin. functionals is linear.
2. Linear in all rows / Multilinear in the rows.
3. Vanishes if the first two rows are equal.
4. Vanishes if two adjacent rows are equal.
5. Switches sign if two adjacent rows are interchanged.
6. Switches sign whenever two rows are interchanged.
7. \(E_{i,c} \& E_{i,j,c}\) behaviour.

Problem. For any \(A \in M_{n \times n}(F)\), compute \(\det A^p\).

Example: \(\begin{pmatrix} 4 & 3 \\ -6 & 5 \end{pmatrix}^{15} = \begin{pmatrix} 7 \\ 6 \end{pmatrix}\) \[\text{here } C^{-1}AC = D, \quad \text{w/ } D = \begin{pmatrix} 1 & 0 \\ 0 & 2 \end{pmatrix}, \quad C = \begin{pmatrix} 1 & 1 \\ 1 & -1 \end{pmatrix}\]

Brilliant idea: If \(A = CDC^{-1}\) for some \(C \& D\), all is easy.

Also dedicated to tutorial: Fibonacci rabbits.