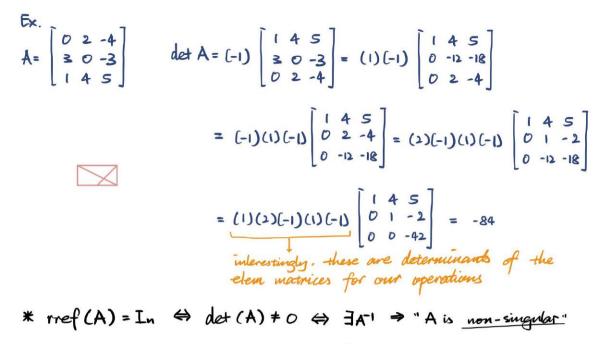
Lec 14

Recall properties of determinants from last lec. * How elem. row ops affect det since det is L.T. from row when others are fixed 1. Interchange two rows → mul det by -1 2. Mul one row by non-zero const → mul by that constant 3. Add mul of one row to mother → mul by 1 # Property 6: PAnn has a now of zeros, det A =0 Proof: we can add another row to the zeros row without changing det A then we have repeated rows => det A = 0 (edge case : [0] in which we can't swap rows, so use L.T. argument) # Property 7: if Ann is upper triangular, then det A is product of entries on the main diagonal olet $\begin{bmatrix} a_1 \\ d_2 \\ \vdots \\ \vdots \end{bmatrix} = \prod_{i=1}^{n} d_i$ Prost Case 1: di, ..., dn = 0. Do. add mul of each row to the row above to get some di is D. Then add Case 2: $A' = \begin{bmatrix} d_1 \\ d_2 \\ 0 \end{bmatrix}$ mul of row to another to get a row of all zeros $A' = \begin{bmatrix} d & 0 \\ 0 & d \end{bmatrix}$ So det A = det - A' = $d_1 det \begin{bmatrix} d_2 & O \\ O & d_n \end{bmatrix}$ We know det A' = O = det A ⇒ det A = d, ... dn = didz det [1 0 6 dn = $d_1 \cdot \cdot \cdot d_n det \begin{bmatrix} 1 & 0 \\ 0 & \cdot \\ 0 & \cdot \end{bmatrix}$ = d, ... dn



* mef (A) = In \Leftrightarrow det (A) = 0 \Leftrightarrow $\nexists_{A'} \rightarrow$ "A is <u>singular</u>"