Lecture - 18
(Determinants) ────→ defined for square matrix

det A / |A|

\# Invertible ────── |A| ≠ 0
\# Non-Invertible ───── |A| = 0

① det I = 1

② Exchange rows: reverse sign of determine

③ → ⓐ If we multiply t with one of the row than determinat becom t times.

$$\begin{vmatrix} ta & tb \\ c & d \end{vmatrix} = t \begin{vmatrix} a & b \\ c & d \end{vmatrix}$$

→ ⓑ $$\begin{vmatrix} a+a' & b+b' \\ c & d \end{vmatrix} = \begin{vmatrix} a & b \\ c & d \end{vmatrix} + \begin{vmatrix} a' & b' \\ c & d \end{vmatrix}$$

Linear for each row.

④ Two equal result in Zero determinant.

⑤ Substract l×row l from row K.
↳ determinat Dosent change.

⑥ Ro
⑦
⑧ |A
⑨ de
⑩ d

⑥ Row of zeros $\longrightarrow$ det A = 0

⑦

$$\begin{vmatrix} d_1 & - & - & - \\ 0 & d_2 & - & - \\ 0 & 0 & d_3 & - \\ 0 & 0 & 0 & d_n \\ 0 & 0 & 0 \end{vmatrix} = d_1 \, d_2 \, d_3 \cdots d_n$$

⑧ $|A| = 0$ when A is Singular.

⑨ $\det AB = (\det A)(\det B)$

$$\left\| \det A^{-1} = \frac{1}{\det A} \right\|$$

$$\det A^n = (\det A)^n$$

~~det mA~~

$$\det mA = \det A \times m^n$$

$\longrightarrow$ {If n = dimension of A}

⑩ $\det A^T = \det A$

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