

Keeper #4: Determinants cont'd/ Inverses

determinant
Notation: $|A|$

or

$$|A| = ad - bc$$

detA

inverse of A = A^{-1}

$$\begin{bmatrix} a & b \\ c & d \end{bmatrix}^{-1} = \frac{1}{\det A} \begin{bmatrix} d & -b \\ -c & a \end{bmatrix}$$

ex. 1

$$\begin{bmatrix} 4 & 7 \\ 2 & 6 \end{bmatrix}^{-1}$$

24 - 14

$$|A| = 10 \quad \frac{1}{10} \begin{bmatrix} 6 & -7 \\ -2 & 4 \end{bmatrix}$$

$$A^{-1} = \begin{bmatrix} .6 & -.7 \\ -.2 & .4 \end{bmatrix}$$

ex. 2

$$B = \begin{bmatrix} 2 & 0 \\ -2 & 5 \end{bmatrix}$$

$$|B| = 10 \quad \frac{1}{10} \begin{bmatrix} 5 & 0 \\ 2 & 2 \end{bmatrix}$$

$$B^{-1} = \begin{bmatrix} .5 & 0 \\ .2 & .2 \end{bmatrix}$$

ex. 3

$$A = \begin{bmatrix} 3 & 4 \\ 6 & 8 \end{bmatrix}^{-1}$$

24 - 24

$$|A| = 0$$

$$\frac{1}{0} \begin{bmatrix} 8 & -4 \\ -6 & 3 \end{bmatrix}$$

$$A^{-1} = \text{undefined}$$

$$A \times A^{-1} = I$$

matrix A

inverse of matrix A

identity matrix