

Unit 1 Day 4 Notes

Inverses

2x2

$$A = \begin{bmatrix} a & b \\ c & d \end{bmatrix}$$

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

\uparrow
determinant

Example:

$$A = \begin{bmatrix} 4 & 7 \\ 2 & 6 \end{bmatrix}$$

$$A^{-1} = \frac{1}{24-14} \begin{bmatrix} 6 & -7 \\ -2 & 4 \end{bmatrix}$$

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

$$A^{-1} = \begin{bmatrix} 3/5 & -7/10 \\ -1/5 & 2/5 \end{bmatrix}$$

$$A \cdot A^{-1} = A^{-1} \cdot A = I = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix} \leftarrow \text{identity matrix } 2 \times 2$$

* If your determinant = 0, then the inverse does not exist
DNE