

Alg II Honors

1

$$+2 \quad \boxed{\text{Reciprocals}} \rightarrow +\frac{1}{2}$$

$$2^{-1} \quad \boxed{\text{Inverse}} \rightarrow \frac{1}{2}$$

$$a^{-N} = \frac{1}{a^N}$$

$$\frac{1}{x^{-2}} \rightarrow x^2$$

~~ghosts~~ ghosts:
(around a number)

3
↓ (what's really
around it)

$$(1) \frac{3^1}{1}$$

Negative exponent rule:

$$a^{-N} = \frac{1}{a^N}$$

$$\frac{1}{a^{-N}} = a^N$$

$$2^{-2} \cdot 2 = (\underline{1}) \text{ Identity}^*$$

$$I = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$$

2x2 Identity
Matrix

$$I = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$$

3x3 Identity
Matrix.

$$\cancel{[A]} \cdot [A] = [A]$$

$$[A] \cdot [A]^{-1} = [I]$$

Inverse Matrix

$$A^{-1} \text{ of } \begin{bmatrix} a & b \\ c & d \end{bmatrix}$$

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

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

Ex.)

$$A^{-1} = \begin{bmatrix} 3 & 1 \\ 4 & 2 \end{bmatrix}$$

$$\det A = 2$$

$$A^{-1} = \frac{1}{2} \begin{bmatrix} 2 & 1 \\ -4 & 3 \end{bmatrix}$$

$$A^{-1} = \begin{bmatrix} 1 & 0.5 \\ -2 & 1.5 \end{bmatrix}$$

$$\text{Ex 2)} \quad \begin{bmatrix} 3 & 1 \\ 4 & 2 \end{bmatrix} \cdot \begin{bmatrix} 1 & -\frac{1}{2} \\ -2 & 1.5 \end{bmatrix} = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$$

Example:

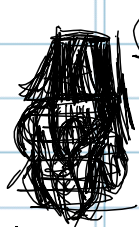
December 17, 20.

$$-3x + 4y = 5$$

$$2x - y = -10$$

• set up in Matrix form

• coefficient Matrix



$$\begin{bmatrix} -3 & 4 \\ 2 & 1 \end{bmatrix} \cdot \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 5 \\ -10 \end{bmatrix}$$

constant Matrix

Variable Matrix

$$\frac{1}{3} \cdot \frac{3x}{1} = 10 \cdot \frac{1}{3}$$

$$\frac{1}{3-8} = \frac{1}{-5} \begin{bmatrix} -1 & -4 \\ -2 & -3 \end{bmatrix} \text{ Inverse matrix}$$

$$\frac{1}{-5} \begin{bmatrix} -1 & -4 \\ -2 & -3 \end{bmatrix} \begin{bmatrix} -3 & 4 \\ 2 & -1 \end{bmatrix} \cdot \begin{bmatrix} x \\ y \end{bmatrix} = \frac{-1}{5} \begin{bmatrix} -1 & -4 \\ -2 & -3 \end{bmatrix} \begin{bmatrix} 5 \\ -10 \end{bmatrix}$$

$$-\frac{1}{5} \begin{bmatrix} -5 & 0 \\ 0 & -5 \end{bmatrix}$$

$$-\frac{1}{5} \begin{bmatrix} 35 \\ 20 \end{bmatrix}$$

$$\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} =$$

$$x = -7$$

$$y = -4$$