7-6 NOTES ON INVERSE MATRICES

Ex 1 Solve:

$$\begin{aligned} x + y - z &= 6 \\ -2x + 3y + z &= -5 \\ 3x + y - 2z &= -16 \end{aligned}$$

Ex 2 Solve: $\frac{1}{4} \cdot 4x = 20$ $\cdot \frac{1}{4}$

$1x = 5$

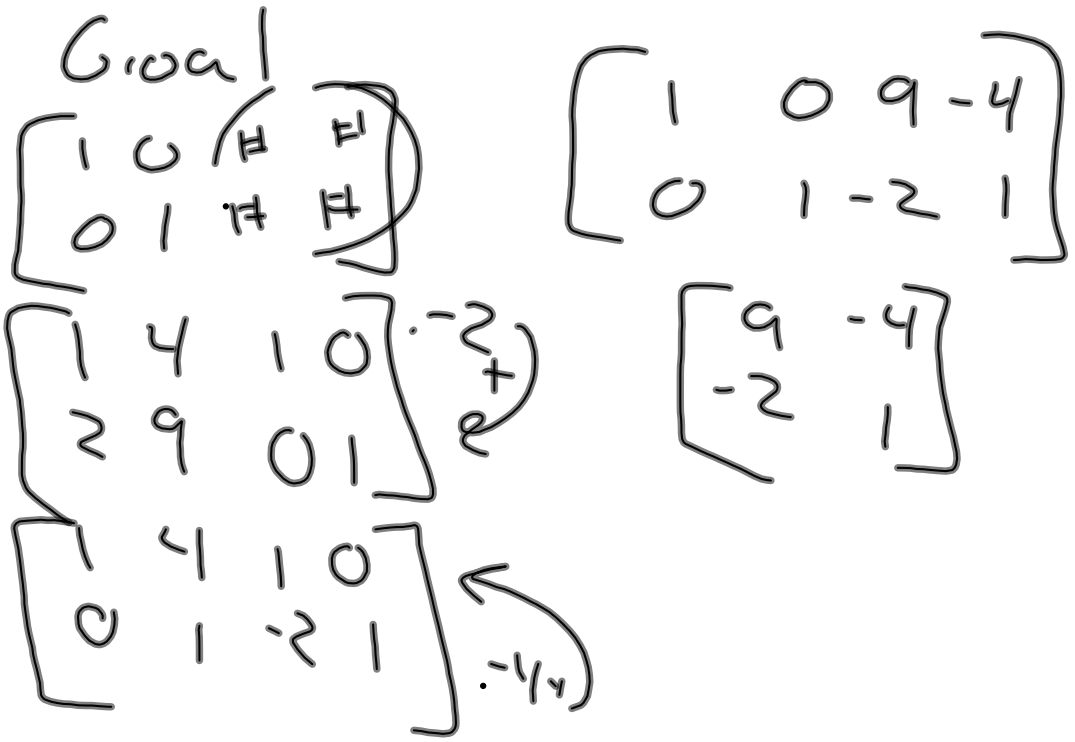
Ex 3 Show that $\begin{bmatrix} 1 & -2 \\ 1 & -1 \end{bmatrix}$ is the inverse of $\begin{bmatrix} -1 & 2 \\ -1 & 1 \end{bmatrix}$

$\begin{bmatrix} 1 & -2 \\ 1 & -1 \end{bmatrix} \cdot \begin{bmatrix} -1 & 2 \\ -1 & 1 \end{bmatrix} = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$

- order doesn't matter

true

Ex 4 Find the inverse of $\begin{bmatrix} 1 & 4 \\ 2 & 9 \end{bmatrix}$



Ex 5 Find the inverse of $\begin{bmatrix} 1 & -1 & 0 \\ 1 & 0 & -1 \\ 6 & -2 & -3 \end{bmatrix}$

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[A]⁻¹
     [[-2  -3  1]
      [-3  -3  1]
      [-2  -4  1]]
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Ex 6 Solve $x + 4y = 2$
$-x - 3y = 1$

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

$A^{-1}A \quad X = A^{-1}B$

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

$(-10, 3)$ $\begin{bmatrix} -10 \\ 3 \end{bmatrix}$

Ex 7 Solve: $x + y - z = 6$
$-2x + 3y + z = -5$
$3x + y - 2z = -16$

$$\begin{bmatrix} 1 & 1 & -1 \\ -2 & 3 & 1 \\ 3 & 1 & -2 \end{bmatrix} \begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 6 \\ -5 \\ -16 \end{bmatrix}$$

$A^{-1}A \cdot X = A^{-1}B$

[A]^-1[B]

$$\begin{bmatrix} -37 \\ -9 \\ -52 \end{bmatrix}$$

$X = A^{-1}B$

$(-37, -9, -52)$

Homework
p.547
#1-5, 11-17, 41-43 odds