

Homework #2  
Due Monday, September 20

1. Let  $A = \begin{bmatrix} 1 & 1 & -2 \\ 0 & 1 & 1 \\ 2 & 4 & -3 \end{bmatrix}$ .

a) Find the  $\det(A)$ . Use the cofactor way to find the determinant.

b) If  $A$  is invertible, find  $A^{-1}$ .

c) Use  $A^{-1}$  to solve the system: 
$$\begin{cases} x_1 + x_2 - 2x_3 = -2 \\ x_2 + x_3 = 3 \\ 2x_1 + 4x_2 - 3x_3 = 1 \end{cases}$$

2. Use Cramer's Rule to solve the given system.

$$\begin{cases} 3x_1 - 2x_2 + x_3 = 4 \\ x_1 + x_2 - x_3 = 2 \\ x_1 + x_3 = 1 \end{cases}$$

3. Let  $A$  and  $B$  be  $3 \times 3$  matrices with  $\det(A) = 3$  and  $\det(B) = -4$ . Determine
- a)  $\det(2A)$
  - b)  $\det(A^{-1})$
  - c)  $\det(B^5)$
  - d)  $\det(A^T B)$