Linear Algebra HW 3

Assignment

1. For the “barnyard problem - see the pre-course assignment:
    a. Form the A matrix for the problem and compute its LU decomposition
    b. Solve the linear equations using the LU decomposition
    c. What is the column space, and null space of the A matrix?
    d. Compute the inverse of the A matrix. What is the determinant of A? The determinant of it’s inverse?
2. Compute steps a through d for the following 3 X 4 rectangular matrix.

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

Optionally check your work by writing a notebook using a library such as numpy’s linalg.