

Math 2418 Linear Algebra Quiz #3
Sept. 12-13, 2001

1.) True or False

A.) If A is a square matrix, $Ax = b$ has a unique solution. T F

B.) If A is an invertible square matrix, $Ax = b$ has a unique solution. T F

C.) If a square matrix A is not invertible, then $Ax = b$ cannot have a unique solution. T F

D.) If A is not invertible, then $Ax = b$ cannot have a unique solution. T F

2.) Suppose
$$\begin{bmatrix} 2 & 3 & 4 \\ 6 & 10 & 17 \\ 10 & 15 & 24 \end{bmatrix} = \begin{bmatrix} 1 & 0 & 0 \\ 3 & 1 & 0 \\ 5 & 0 & 1 \end{bmatrix} \begin{bmatrix} 2 & 3 & 4 \\ 0 & 1 & 5 \\ 0 & 0 & 4 \end{bmatrix}.$$

Use LU factorization to solve:

$$2x_1 + 3x_2 + 4x_3 = 2$$

$$6x_1 + 10x_2 + 17x_3 = 16$$

$$10x_1 + 15x_2 + 24x_3 = 14$$

Answer: 2.)