MATH 3406 Advanced Linear Algebra: LU decomposition

1) What is the LU decomposition of the following matrix?

A =

$$\begin{bmatrix}
1 & 2 & 3 \\
4 & 5 & 6 \\
7 & 8 & 9
\end{bmatrix}$$

A) A = LU

B) A = L

C) A = U

D) A = LU'

2) What is the LU decomposition of the following matrix?

B =

$$\begin{bmatrix}
1 & 2 & 3 \\
0 & 1 & 2 \\
0 & 0 & 1
\end{bmatrix}$$

A) B = LU

B) B = L

C) B = U

D) B = LU'

3) What is the LU decomposition of the following matrix?

C =

$$\begin{bmatrix}
1 & 2 & 3 \\
0 & 5 & 6 \\
0 & 0 & 9
\end{bmatrix}$$

A) C = LU

B) C = L

C) C = U

D) C = LU'

4) What is the LU decomposition of the following matrix?

D =

\begin{bmatrix}
1 & 2 & 3 \\
0 & 4 & 5 \\
0 & 0 & 6
\end{bmatrix}

A) D = LU

B) D = L

C) D = U

D) D = LU'

5) What is the LU decomposition of the following matrix?

E =

\begin{bmatrix}
1 & 2 & 3 \\
0 & 1 & 4 \\
0 & 0 & 5
\end{bmatrix}

A) E = LU

B) E = L

C) E = U

D) E = LU'

Answer Key:

1) A) A = LU

2) A) B = LU

3) A) C = LU

4) A) D = LU

5) A) E = LU