

Math 4133 - Linear Algebra

Quiz #4 - 2013.02.25

Solutions

Give examples of each of the three elementary matrix operations using 3×3 matrices, be sure to describe each.

Answers will vary, but here are some examples. First, we multiply a row by a scalar. In the following example, we multiply row 3 by -2 :

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

Next up, we will swap rows, in particular, the second and third rows:

$$E = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 0 & 1 \\ 0 & 1 & 0 \end{bmatrix}$$

and lastly, we add a scalar multiple of one row to another. As an example, we add -3 times row 3 to row 1:

$$E = \begin{bmatrix} 1 & 0 & -3 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$$