

1) Find the elementary matrices of the following row operations!

a) $R_2 \rightarrow R_2 - 2R_1$

b) $R_1 \leftrightarrow R_3$

c) $R_3 \rightarrow R_3 + 7R_2$

d) $R_2 \rightarrow \frac{R_2}{4}$

2) Find the inverse of the obtained elementary matrices (in Problem 1) by finding inverse elementary operations and their corresponding elementary matrices!

3) Express the following matrix as product of elementary matrices.

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

$$B = \begin{bmatrix} \frac{1}{2} & \frac{1}{3} \\ \frac{1}{4} & \frac{1}{5} \end{bmatrix}$$

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

$$D = \begin{bmatrix} 1 & 0 & -1 \\ 0 & 2 & 4 \\ 0 & 0 & 3 \end{bmatrix}$$

4) State the following statements as True or False with justification.

a) Any invertible matrix is row equivalent to identity matrix.

b) Elementary row operations do not change the determinant of matrix.

5) Find the elementary operations corresponding to each of the following elementary matrix.

a) $\begin{bmatrix} 1 & -3 \\ 0 & 1 \end{bmatrix}$

b) $\begin{bmatrix} 0 & 1 & 0 \\ 1 & 0 & 0 \\ 0 & 0 & 1 \end{bmatrix}$

d) $\begin{bmatrix} 1 & 0 & 0 \\ 0 & \frac{1}{2} & 0 \\ 0 & 0 & 1 \end{bmatrix}$

e) $\begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & -1 \end{bmatrix}$

$$c) \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & -4 \\ 0 & 0 & 1 \end{bmatrix}$$

$$e) \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 2 & 1 \end{bmatrix}$$

For any subject related queries , please feel free to send an email to:
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