

Diagram illustrating the elimination of the third column from a 3x3 matrix using the first row.

The original matrix (left) is:

$$\begin{bmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{bmatrix}$$

The resulting matrix (right) is:

$$\begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \\ a_{31} & a_{32} \end{bmatrix}$$

Red lines and arrows indicate the elimination steps:

- Red lines connect a_{13} to a_{23} and a_{33} , indicating the subtraction of a multiple of the first row from the second and third rows.
- Red arrows point from the original a_{23} and a_{33} to the resulting zeroed-out positions in the third column.

Green lines and arrows indicate the resulting zeroed-out elements in the third column:

- Green lines connect a_{23} and a_{33} to the resulting zeroed-out positions in the third column.
- Green arrows point from the resulting zeroed-out positions in the third column to the original a_{23} and a_{33} .