

Determinant

$$M_1 = \begin{vmatrix} 2 & 3 \\ 4 & 5 \end{vmatrix}$$

$$\det(M_1) = 2 \times 5 - 4 \times 3 = -2$$

Inverse

$$\text{Inverse}(M_1) = \frac{1}{-2} \begin{vmatrix} 5 & -3 \\ -4 & 2 \end{vmatrix}$$

Cross product

$$V = \begin{vmatrix} 1 \\ 2 \\ 3 \end{vmatrix} \quad W = \begin{vmatrix} 4 \\ 5 \\ 6 \end{vmatrix}$$

$$V \times W = \begin{vmatrix} 2 \times 6 - 3 \times 5 & 3 \times 4 - 6 \times 1 & 1 \times 5 - 2 \times 4 \end{vmatrix}$$

$$= \begin{bmatrix} -3 & , & 6 & , & -3 \end{bmatrix}$$