

13/8/2016

* Determinant value of a square matrix :- the sum of the products of elements of a row (column) with their corresponding cofactors is known as determinant value of a square matrix.

$$2 \times 2 \quad \begin{bmatrix} a & d \\ c & b \end{bmatrix}_{2 \times 2}$$

$$|A| = ad - bc$$

3x3

$$A = \begin{bmatrix} 1 & 1 & 1 \\ 1 & 5 & 1 \\ 1 & 3 & 7 \end{bmatrix}_{3 \times 3}$$

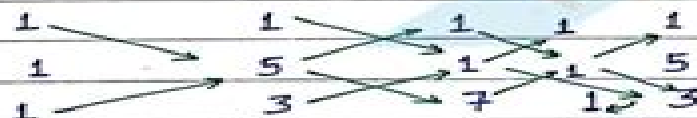
$$|A| = 1 \begin{vmatrix} 5 & 1 \\ 3 & 7 \end{vmatrix} - 1 \begin{vmatrix} 1 & 1 \\ 1 & 7 \end{vmatrix} + 1 \begin{vmatrix} 1 & 5 \\ 1 & 3 \end{vmatrix}$$

$$|A| = 1(35 - 3) - 1(7 - 1) + 1(3 - 5)$$

$$|A| = 32 - 6 - 2$$

$$|A| = 24$$

Trick
3x3



$$U = 5 + 3 + 7 = 15$$

$$L = 35 + 1 + 3 = 39$$

$$\begin{aligned} |A| &= 39 - 15 \\ &= (L - U) \\ &= 24 \end{aligned}$$

Advanced Engineering Mathematics Notes

Grant B. Gustafson, Calvin H. Wilcox



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