Key Takeaways

Multiplication of Matrix:

- $A_{m\times p} \cdot B_{p\times n} = C_{m\times n} = [c_{ij}]_{m\times n}$, where $c_{ij} = \sum_{k=1}^{p} a_{mk} b_{kn}$

Example: $A = \begin{bmatrix} 2 & 0 & -1 \\ 3 & -4 & 6 \end{bmatrix}, B = \begin{bmatrix} 1 & -3 \\ 0 & 5 \\ -7 & -2 \end{bmatrix}$

$$C = AB = \begin{bmatrix} 2 & 0 & -1 \\ 3 & -4 & 6 \end{bmatrix}_{2\times 3} \begin{bmatrix} 1 & -3 \\ 0 & 5 \\ -7 & -2 \end{bmatrix}_{3\times 2}$$

c_{ij} = Dot product of i^{th} row vector of A with j^{th} column vector of B

$$= \begin{bmatrix} 2\cdot 1 + 0 + (-1)\cdot(-7) & 2(-3) + 0 + (-1)\cdot(-2) \\ 3\cdot 1 + 0 + 6(-7) & 3(-3) - 4\cdot 5 + 6(-2) \end{bmatrix}_{2\times 2}$$

$$= \begin{bmatrix} 9 & -4 \\ -39 & -41 \end{bmatrix}_{2\times 2}$$

Return To Top