Matrix Product

Saturday, 26 July 2025 3:00 PM

$$A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \end{bmatrix} \qquad B = \begin{bmatrix} 10 & 11 \\ 20 & 21 \\ 30 & 31 \end{bmatrix}$$

$A \times B = ?$

$$= \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \end{bmatrix} \times \begin{bmatrix} 10 & 11 \\ 20 & 21 \\ 30 & 31 \end{bmatrix}$$

$$= \begin{bmatrix} (10 + 2\times20 + 3\times30) & (1\times11 + 2\times21 + 3\times1) \\ (4\times10 + 5\times20 + 6\times30) & (4\times11 + 5\times21 + 6\times31) \end{bmatrix}$$

$$= \begin{bmatrix} 10 + 40 + 90 & 11 + 42 + 93 \\ 40 + 100 + 180 & 44 + 105 + 186 \end{bmatrix}$$

$$A \times B = \begin{bmatrix} 140 & 146 \\ 320 & 335 \end{bmatrix}$$