If $A = \begin{bmatrix} 2 & 0 & -1 \\ 3 & -4 & 6 \end{bmatrix}, B = \begin{bmatrix} 1 & -3 \\ 0 & 5 \\ -7 & -2 \end{bmatrix}$. Find the matrix BA.

Solution :

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

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

$$= \begin{bmatrix} 2-9 & 0+12 & -1-18 \\ 0+15 & 0-20 & 0+30 \\ -14-6 & 0+8 & 7-12 \end{bmatrix} = \begin{bmatrix} -7 & 12 & -19 \\ 15 & -20 & 30 \\ -20 & 8 & -5 \end{bmatrix}_{3\times 3}$$

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