LA - 1.5 - Scalar/Multiplication Matrices

Scalar Product $-$ *multiply a number* $c \times A$

$$A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \\ 5 & 6 \end{bmatrix} \qquad c = 2 \qquad 2A = \begin{bmatrix} 2 & 4 \\ 6 & 8 \\ 10 & 12 \end{bmatrix} \qquad cA = \begin{bmatrix} 1 \times 2 & 2 \times 2 \\ 3 \times 2 & 4 \times 2 \\ 5 \times 2 & 6 \times 2 \end{bmatrix}$$

$$Ac = A2 = 2A$$

Multiply $A \bullet B$

$$A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \\ 5 & 6 \end{bmatrix} \qquad B = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$$

Point to where you look. Both Hands!

Left hand Horizontal Right Hand Vertical!

$$\begin{bmatrix} 1 & 2 \\ 3 & 4 \\ 5 & 6 \end{bmatrix} \bullet \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix} = \begin{bmatrix} 1 \times 1 + 2 \times 3 & 1 \times 2 + 2 \times 4 \\ 3 \times 1 + 4 \times 3 & 3 \times 2 + 4 \times 4 \\ 5 \times 1 + 6 \times 3 & 5 \times 2 + 6 \times 4 \end{bmatrix} = \begin{bmatrix} 7 & 10 \\ 15 & 14 \\ 23 & 34 \end{bmatrix}$$

3×2 2×2 3×2

You end up with the # of rows in the first matrix and the number of columns in the second.

$2 = 2$

r_1 ; *all about* a_{r1} *times everything in* b^*
r_2 ; *all about* a_{r2} "
r_2 ; *all about* a_{r3} "

3×2
Answer

$(If\ A\ is\ 1st)$ *Appropriately

Coincidence it is the same type as Matrix A!

Steps