

14.2 Notes: Matrix Multiplication

ex 1: Given matrices $A = \begin{bmatrix} 1 & 3 \\ 5 & -4 \end{bmatrix}$ $B = \begin{bmatrix} -2 & -3 \\ 4 & 2 \end{bmatrix}$ & $C = \begin{bmatrix} 4 & -1 \\ 2 & 3 \end{bmatrix}$ evaluate:

(a) $AB =$

(b) $BA =$

(c) $AB = BA ?$

(d) $BC =$

(e) $(AB)C = A(BC) ?$

ex 2: $\begin{bmatrix} -3 & 5 \\ 1 & -1 \end{bmatrix} \begin{bmatrix} 4 & 3 & -2 \\ 1 & 0 & 7 \end{bmatrix} =$

ex 3: $\begin{bmatrix} 4 & 3 & -2 \\ 1 & 0 & 7 \end{bmatrix} \begin{bmatrix} -3 & 5 \\ 1 & -1 \end{bmatrix} =$

ex 4: $\begin{bmatrix} 2 & 1 & 4 \\ 3 & 1 & 5 \end{bmatrix} \begin{bmatrix} 1 & 0 & 1 & 4 \\ 2 & 6 & 3 & 0 \\ 0 & -1 & 2 & 5 \end{bmatrix} =$

ex 5: $\begin{bmatrix} 3 & -2 \\ 1 & 7 \end{bmatrix} \begin{bmatrix} 6 \\ 1 \end{bmatrix} =$

Notice: the order of the matrices (and their dimensions) will affect the size of the resultant product!

$$\text{ex 6: } \begin{bmatrix} 5 & 2 \end{bmatrix} \begin{bmatrix} -3 \\ 7 \end{bmatrix} =$$

$$\text{ex 7: } \begin{bmatrix} -3 \\ 7 \end{bmatrix} \begin{bmatrix} 5 & 2 \end{bmatrix} =$$