

Section 3.2: Cont'd

Wednesday, October 10, 2018

11:36 AM

example: let $A = [1 \ 3]$ and $B = \begin{bmatrix} 2 \\ 4 \end{bmatrix}$

Calculate:

$$a) \quad AB = \overset{1 \times 2}{[1 \ 3]} \overset{2 \times 1}{\begin{bmatrix} 2 \\ 4 \end{bmatrix}} = [14]$$

$$b) \quad BA = \begin{bmatrix} 2 \\ 4 \end{bmatrix} [1 \ 3] = \begin{bmatrix} 2 & 6 \\ 4 & 12 \end{bmatrix}$$

$$c) \quad A + B = \text{undefined}$$

$$d) \quad A^T + B = \begin{bmatrix} 1 \\ 3 \end{bmatrix} + \begin{bmatrix} 2 \\ 4 \end{bmatrix} = \begin{bmatrix} 3 \\ 7 \end{bmatrix}$$

$$e) \quad A^T B^T = \begin{bmatrix} 1 \\ 3 \end{bmatrix} [2 \ 4] = \begin{bmatrix} 2 & 4 \\ 6 & 12 \end{bmatrix}$$

$$\text{note that } A^T B^T = (BA)^T$$

$$\text{and } A^T B^T \neq (AB)^T$$