



WEEK-IN-REVIEW 1 (1.1, 1.2)

Problem 1. Given the following matrices,

$$A = \begin{bmatrix} 1 \\ 3 \\ 2 \end{bmatrix}, \quad B = [5 \quad 2 \quad 6], \quad C = \begin{bmatrix} 1 & 2 \\ e & 4 \\ 5 & f \end{bmatrix} \quad \text{and} \quad D = \begin{bmatrix} 3 & 1 & 1 \\ 1 & 3 & 2 \\ -1 & 2 & 1 \end{bmatrix}$$

- (1) What are the dimensions of each matrix?
- (2) What are the values of a_{13} , b_{13} , c_{22} and d_{32} if they exist?
- (3) Is the operation $A + B$ possible? If so, find the resultant matrix.
- (4) Is the operation $A + 2B^T$ possible? If so, find the resultant matrix.
- (5) Is the operation AB possible? If so, find the resultant matrix. What about BA ?
Is $AB = BA$?
- (6) Is the operation DC possible? If so, find the resultant matrix. What about CD ?
Is $CD = DC$?
- (7) Is the operation ABD possible? If so, find the resultant matrix.

Problem 2. Given the following matrices,

$$A = \begin{bmatrix} x & 0 \\ -1 & 5 \end{bmatrix}, \quad B = \begin{bmatrix} 6 & -2 \\ y & z \end{bmatrix} \quad \text{and} \quad C = \begin{bmatrix} 8 & s \\ 0 & 1 \end{bmatrix}$$

- (1) Find $A + B - C$
- (2) What is $a_{21} - b_{22} + c_{12}$?
- (3) If $D = A + C^T$, find d_{21} and d_{22}
- (4) If $4A + 2B = 3C$, find the values of a, b, c, d .
- (5) Find CA^T .

Problem 3. Given the matrices,

$$A = \begin{bmatrix} 2 \\ -1 \\ 12 \end{bmatrix} \text{ and } B = \begin{bmatrix} 5 \\ 2 \\ (\frac{1}{4}) \end{bmatrix}$$

find the matrix X if $-6X + 5A = 2X + 4B$

Problem 4. Using technology, find the matrix AB if $A = \begin{bmatrix} 1 & 5 & -2 \\ 9 & 3 & 0 \end{bmatrix}$ and $B = \begin{bmatrix} 6 & -9 & 0 \\ -4 & 7 & 2 \\ 10 & 1 & 8 \end{bmatrix}$

Problem 5. The Bryan-College Station area has 3 HEB stores near the university campus. The Jones Crossing location stocks 100 lbs of bananas, 20 lbs of guava fruit, 90 lbs of apples, and 150 lbs of oranges each week. The Texas Avenue location stocks 70 lbs, 10 lbs, 120 lbs, and 75 lbs of bananas, guava fruit, apples, and oranges respectively. The Villa Maria location stocks 110 lbs, 35 lbs, 180 lbs, and 100 lbs of bananas, guava fruit, apples, and oranges respectively. The price per pound of bananas is \$1.25, guavas is \$2.50, apples is \$0.75 and oranges is \$1.10. Use this information to

- (1) Write a 3×4 matrix to represent the weekly stock in all three HEBs
- (2) Write a 4×1 matrix to represent the price of fruits.
- (3) Write a matrix equation to represent the total price of the inventory in each of the HEBs.