

Math 1313
Homework 6
Section 3.3

Given the following matrices, answer the following questions below.

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

$$D = \begin{bmatrix} 0 & -2 & 4 \\ 1 & 3 & -5 \end{bmatrix}, \quad E = \begin{bmatrix} 4 & 2 & 7 \\ 6 & -2 & 2 \\ 1 & -1 & 6 \end{bmatrix}, \quad F = \begin{bmatrix} -4 & 0 \\ 4 & 2 \\ -2 & 3 \end{bmatrix}$$

1. Find the transpose of F.

a. $F^T = \begin{bmatrix} 0 & 4 \\ -2 & -4 \\ -3 & 2 \end{bmatrix}$

b. $F^T = \begin{bmatrix} -4 & 4 & -2 \\ 0 & 2 & 3 \end{bmatrix}$

c. $F^T = \begin{bmatrix} 0 & 2 & 3 \\ -4 & 4 & -2 \end{bmatrix}$

d. $F^T = \begin{bmatrix} 4 & 0 \\ -4 & -2 \\ 2 & -3 \end{bmatrix}$

e. $F^T = \begin{bmatrix} 3 & -2 & 4 \\ -4 & 0 & 2 \end{bmatrix}$

2. Find $B - D$.

a. Not possible

b. $\begin{bmatrix} 3 & -3 & 6 \\ -4 & 7 & -5 \end{bmatrix}$

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c. $\begin{bmatrix} 3 & 1 & -2 \\ -6 & 1 & 5 \end{bmatrix}$

d. $\begin{bmatrix} 0 & 2 & 8 \\ -5 & 12 & 0 \end{bmatrix}$

e. $\begin{bmatrix} -3 & -1 & 2 \\ 6 & -1 & -5 \end{bmatrix}$

3. Find $3E + 2C$

a. Not possible

b. $\begin{bmatrix} 12 & 2 & 23 \\ 6 & 2 & 12 \\ 1 & 1 & 8 \end{bmatrix}$

c. $\begin{bmatrix} 8 & 2 & 14 \\ 6 & 8 & 13 \\ -1 & 4 & 3 \end{bmatrix}$

d. $\begin{bmatrix} 12 & 6 & 21 \\ 18 & -6 & 6 \\ 3 & -3 & 18 \end{bmatrix}$

e. $\begin{bmatrix} 0 & -4 & 2 \\ -12 & 8 & 6 \\ -2 & 4 & -10 \end{bmatrix}$

4. Find $D^T + 3A$

a. Not possible

b. $\begin{bmatrix} 2 & -8 & 17 \\ 4 & 13 & -21 \end{bmatrix}$

c. $\begin{bmatrix} -6 & 8 & -19 \\ -4 & -15 & 23 \end{bmatrix}$

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d. $\begin{bmatrix} 6 & 4 \\ -8 & 15 \\ 19 & -23 \end{bmatrix}$

e. $\begin{bmatrix} 2 & 2 \\ -4 & 7 \\ 9 & -11 \end{bmatrix}$

5. The choices for problem number 28 part a from the book are given below

a. $\begin{bmatrix} 500 & 470 \\ 498 & 512 \\ 450 & 478 \\ 530 & 500 \end{bmatrix}$

b. $\begin{bmatrix} 500 & 478 & 512 & 470 \\ 530 & 450 & 498 & 500 \end{bmatrix}$

c. $\begin{bmatrix} 500 & 530 \\ 478 & 450 \\ 512 & 498 \\ 470 & 500 \end{bmatrix}$

d. $\begin{bmatrix} 500 & 470 & 498 & 512 \\ 450 & 478 & 530 & 500 \end{bmatrix}$

e. $\begin{bmatrix} 500 & 470 \\ 478 & 498 \\ 450 & 512 \\ 500 & 530 \end{bmatrix}$

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6. The choices for problem number 28 part b from the book are given below

a.
$$\begin{bmatrix} 25 & 23.5 \\ 23.9 & 24.9 \\ 22.5 & 25.6 \\ 25 & 26.5 \end{bmatrix}$$

b.
$$\begin{bmatrix} 25 & 26.5 \\ 23.9 & 22.5 \\ 25.6 & 24.9 \\ 23.5 & 25 \end{bmatrix}$$

c.
$$\begin{bmatrix} 25 & 23.9 & 25.6 & 23.5 \\ 26.5 & 22.5 & 24.9 & 25 \end{bmatrix}$$

d.
$$\begin{bmatrix} 25 & 23.5 & 24.9 & 25.6 \\ 22.5 & 23.9 & 26.5 & 25 \end{bmatrix}$$

e.
$$\begin{bmatrix} 25 & 23.5 \\ 24.9 & 25.6 \\ 22.5 & 23.9 \\ 26.5 & 25 \end{bmatrix}$$

Use the following matrix equation to answer questions 7 – 10.

Given

$$3 \begin{bmatrix} u-2 & 4v \\ 1 & 2 \\ 1 & 0 \end{bmatrix} - 2 \begin{bmatrix} 5 & -4 \\ w+2 & -2x \\ 0 & -1 \end{bmatrix} = \begin{bmatrix} 5 & 4 \\ 1 & 2 \\ 3y & 5z \end{bmatrix}$$

7. Find x.

- a. 0
- b. 2
- c. -1
- d. 4
- e. 1

8. Find y.

- a. 1/3
- b. 8

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- c. $2/5$
- d. 14
- e. 1

9. Find u .

- a. 5
- b. 7
- c. -5
- d. 0
- e. 11

10. Find z .

- a. $2/5$
- b. $11/4$
- c. 2
- d. $-1/2$
- e. -3