

SHOW ALL WORK.

Complete Parts A & B, OR Parts B & C

PART A:

Perform the indicated operation, if possible. If not possible, state the reason.

1. $\begin{bmatrix} 5 & 2 \\ -1 & 8 \end{bmatrix} + \begin{bmatrix} -8 & 10 \\ -6 & 3 \end{bmatrix}$

2. $\begin{bmatrix} 10 & -8 \\ 5 & -3 \end{bmatrix} - \begin{bmatrix} 12 & -3 \\ 3 & -4 \end{bmatrix}$

3. $-3 \begin{bmatrix} 2 & 0 & -5 \\ 4 & 7 & -3 \end{bmatrix}$

4. Solve the matrix equation for x and y .

$$\begin{bmatrix} -1 & 3x \\ -4 & 5 \end{bmatrix} = \begin{bmatrix} -1 & -18 \\ 2y & 5 \end{bmatrix}$$

State whether the product AB is defined. If so, give the dimensions of AB .

5. $A: 3 \times 4, B: 4 \times 2$

6. $A: 2 \times 1, B: 2 \times 2$

PART B:

Use matrices $A, B, C,$ and D to evaluate the matrix expression.

$$A = \begin{bmatrix} 5 & -4 \\ 3 & -1 \end{bmatrix} \quad B = \begin{bmatrix} 18 & -12 \\ -6 & 0 \end{bmatrix} \quad C = \begin{bmatrix} 1.8 & -1.5 & 10.6 \\ -8.8 & 3.4 & 0 \end{bmatrix} \quad D = \begin{bmatrix} 7.2 & 0 & -5.4 \\ 2.1 & -1.9 & 3.3 \end{bmatrix}$$

7. $B + C$

8. $B - A$

9. $4A - B$

10. $\frac{2}{3}B$

11. $C + D$

12. $C + 3D$

13. $D - 2C$

14. $0.5C - D$

15. Solve the matrix equation for x and y .

$$2 \begin{bmatrix} 8 & -x \\ 5 & 6 \end{bmatrix} - \begin{bmatrix} 3 & -9 \\ 10 & -4y \end{bmatrix} = \begin{bmatrix} 13 & 4 \\ 0 & 16 \end{bmatrix}$$

In Exercises 16-19, use the following information.

Book prices. The matrices below show the number of books sold and the average price (in dollars) for the years 2002, 2003, and 2004.

	2002 (A)		2003 (B)		2004 (C)	
	Sold	Price	Sold	Price	Sold	Price
Book A	125,000	52.00	110,000	55.50	90,000	47.50
Book B	85,000	83.50	95,000	85.50	100,000	89.00
Book C	190,000	45.60	210,000	56.25	225,000	75.25

16. You purchased book A in 2002, book C in 2003, and book B in 2004. How much did you spend on these three books?
17. How many more (or less) volumes of book B were sold in 2004 than in 2002?
18. How much more (or less) is the price of book A in 2004 than in 2002?
19. In 2005, would you expect book C sales to be more or less than 100,000?

Find the product. If the product is not defined, state the reason.

20. $\begin{bmatrix} 5 & 0 \\ -4 & 1 \end{bmatrix} \begin{bmatrix} -3 & 2 \\ 6 & 2 \end{bmatrix}$

21. $\begin{bmatrix} 5 & 2 \\ 0 & -4 \\ 1 & 6 \end{bmatrix} \begin{bmatrix} 3 & 7 \\ -2 & 0 \end{bmatrix}$

22. $\begin{bmatrix} 0 & -4 \\ 2 & 5 \\ 4 & 0 \end{bmatrix} \begin{bmatrix} 2 & 8 \\ 3 & 0 \\ -5 & -2 \end{bmatrix}$

23. Matrix S gives the numbers of three types of cars sold in February by two car dealers, dealer A and dealer B. Matrix P gives the profit for each type of car sold. Which matrix is defined, SP or PS? Find this matrix and explain what its elements represent.

Matrix S		Matrix P			
	A	B	Compact	Mid-size	Full-size
Compact	21	16	\$650	\$825	\$1050
Mid-size	40	33			
Full-size	15	19			

PART C:

24. Find the matrix X that makes the equation true.

$$3X - \begin{bmatrix} 11 & -6 \\ 2 & 1 \end{bmatrix} = \begin{bmatrix} -13 & 15 \\ -19 & 2 \end{bmatrix}$$

25. Solve the matrix equation for x and y.

$$\begin{bmatrix} 4 & 1 & 3 \\ -2 & x & 1 \end{bmatrix} \begin{bmatrix} 9 & -2 \\ 2 & 1 \\ -1 & 1 \end{bmatrix} = \begin{bmatrix} y & -4 \\ -13 & 8 \end{bmatrix}$$