

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

1) _____

Perform the indicated operations and simplify your answer: $\begin{bmatrix} 3 & -1 \\ 4 & 2 \\ 6 & -8 \end{bmatrix} + 2 \begin{bmatrix} 4 & -1 \\ 0 & 5 \\ -4 & 3 \end{bmatrix}$

2) Perform the indicated operations and simplify your answer: $3 \begin{bmatrix} 0 & 0 \\ -1 & 2 \end{bmatrix} - 4 \begin{bmatrix} 1 & 9 \\ 0 & -3 \end{bmatrix}$ _____

3) If $\mathbf{A} = \begin{bmatrix} 1 & 2 & 3 \\ 3 & 4 & 5 \end{bmatrix}$; $\mathbf{B} = \begin{bmatrix} 2 & -1 & -2 \\ 1 & -3 & -2 \end{bmatrix}$, then find $(\mathbf{A} + \mathbf{B})^T$. _____

4) Find x, y, z, u, t, v such that $\begin{bmatrix} x & y & z \\ u & t & v \end{bmatrix} + 2 \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \end{bmatrix} = \begin{bmatrix} 8 & 3 & 5 \\ 9 & 8 & 14 \end{bmatrix}$ _____

5) _____

Perform the indicated operation and simplify your answer: $\begin{bmatrix} 1 & -1 & 0 \\ 2 & 3 & 4 \end{bmatrix} \begin{bmatrix} 1 & 0 \\ 5 & 1 \\ -2 & 3 \end{bmatrix}$

6) Perform the indicated operation and simplify your answer: $\begin{bmatrix} 2 \\ 4 \end{bmatrix} \begin{bmatrix} 3 & 1 & 0 \end{bmatrix}$ _____

7) Perform the indicated operations and simplify your answer: $2 \begin{bmatrix} 3 \\ 1 \end{bmatrix} - \begin{bmatrix} 1 & 2 \\ -3 & 0 \end{bmatrix} \begin{bmatrix} 1 \\ 0 \end{bmatrix}$ _____

8) Use matrix multiplication to represent the system: $\begin{cases} 3x + 2y = 2 \\ 4x + y = 5 \end{cases}$ _____

9) _____

Use matrix multiplication to represent the system: $\begin{cases} 4x + 6z = 3 \\ x - y + z = 4 \\ 3x + y - z = 5 \end{cases}$

10) Let $\mathbf{A} = \begin{bmatrix} 1 & 2 \\ 2 & -1 \end{bmatrix}$. Find \mathbf{A}^2 . _____

11) Let $\mathbf{A} = \begin{bmatrix} 1 & 1 \\ 2 & -1 \end{bmatrix}$; $\mathbf{B} = \begin{bmatrix} 3 & -5 \\ -9 & 2 \end{bmatrix}$; $\mathbf{C} = \begin{bmatrix} -2 & 2 \\ 4 & -1 \end{bmatrix}$. Find $\mathbf{A}[\mathbf{B} + 2\mathbf{C}]$ _____

12) An appliance store has 25 refrigerators, 30 ranges, and 10 dishwashers in stock. If the value of each refrigerator is \$600, each range is \$300 and each dishwasher is \$250, use matrix operations to find the total value of the appliance store's inventory. _____

13) An appliance store has 25 refrigerators, 30 ranges, and 10 dishwashers in stock, and a second store with 15 refrigerators, 25 ranges, and 20 dishwashers in stock. If the value of each refrigerator is \$600, each range is \$300 and each dishwasher is \$250, find the total value of the inventory at the two appliance stores. _____

- 14) A pet store has 6 kittens, 10 puppies, and 7 parrots in stock, and a second store with 8 kittens, 14 puppies, and 9 parrots in stock. If the value of each kitten is \$55, each puppy is \$150 and each parrot is \$35, find the total value of the pet store's inventory. 14) _____
- 15) The price charged for 2 different CDs at two different stores can be represented by the matrix $\mathbf{P} = \begin{bmatrix} 14 & 16 \\ 13 & 15 \end{bmatrix}$ Store A. The quantities of each CD sold at each store can be represented by the matrix $\mathbf{Q} = \begin{bmatrix} 20 & 30 \\ 25 & 40 \end{bmatrix}$. Show that the transpose of the income generated $(\mathbf{PQ})^T$ is equal to the product of the transposes of \mathbf{P} and \mathbf{Q} in reverse order, $\mathbf{Q}^T\mathbf{P}^T$. 15) _____