

Matrix Homework

Name _____ Date _____ Period _____

State the size of the given matrix.

$$1) \begin{bmatrix} 3 & -2 & 7 & 9 \\ 1 & 0 & -3 & 5 \\ -8 & 2 & 10 & -6 \end{bmatrix}$$

$$2) [5 \quad -7 \quad -2 \quad 1]$$

$$3) \begin{bmatrix} 9 \\ 6 \\ 5 \end{bmatrix}$$

$$4) \begin{bmatrix} 6 & 8 & -17 \\ -7 & -5 & 15 \\ 1 & 14 & 2 \\ 11 & 13 & -3 \end{bmatrix}$$

Perform the indicated operations:

$$5) 3 \begin{bmatrix} 5 & -6 & 3 \\ 0 & -4 & 8 \\ 10 & -11 & 12 \end{bmatrix} - 2 \begin{bmatrix} 2 & -4 & 0 \\ 5 & 11 & -2 \\ 5 & 0 & -10 \end{bmatrix}$$

$$6) \begin{bmatrix} -2 & 8 \\ -11 & 5 \end{bmatrix} + 3 \begin{bmatrix} 5 & 3 & -11 \\ 44 & 0 & 5 \\ -3 & 2 & 8 \end{bmatrix}$$

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

$$7) [3 \quad -1] \begin{bmatrix} 5 \\ 7 \end{bmatrix}$$

$$8) \begin{bmatrix} -1 & 0 \\ 5 & 4 \end{bmatrix} [4 \quad -6]$$

$$9) \begin{bmatrix} 9 & -3 \\ 0 & 2 \end{bmatrix} \begin{bmatrix} 0 & 1 \\ 4 & -2 \end{bmatrix}$$

$$10) \begin{bmatrix} 5 & 2 \\ 0 & -4 \\ 1 & 6 \end{bmatrix} \begin{bmatrix} 3 & 7 \\ -2 & 0 \end{bmatrix}$$

$$11) \begin{bmatrix} 1 & 3 & 0 \\ 2 & 12 & -4 \end{bmatrix} \begin{bmatrix} 9 & 1 \\ 4 & -3 \\ -2 & 4 \end{bmatrix}$$

12) Summarize the difference in the process of adding matrices vs. multiplying matrices. Make sure you discuss things like dimensions, corresponding positions, rows, and columns.

13. Zack is helping to place an order for the sports teams this fall and has collected the following information. Create a matrix to organize the information. Write labels!

- Soccer team needs 5 shorts, 20 pairs of socks, 25 t-shirts, and 15 caps
- Football team needs 40 t-shirts, 30 caps, 30 pairs of socks, and 0 shorts
- Tennis team needs 18 caps, 12 pairs of socks, 15 t-shirts, and 10 shorts

14. Two companies are competing for Zack's business. Create another matrix to organize the following information. Write labels in same order as #1!

- Big 5 Sports charges \$2 for each pair of socks, \$12 a shirt, \$8 for each cap, and \$20 for shorts.
- Walmart charges \$1.50 for each pair of socks, \$15 for each shirt, \$10 for each cap, and \$15 for shorts.

15. The principal has asked Zack to create a matrix that will display how much it would cost for each team to buy its clothing from each store. Make sure your matrices for questions 1 and 2 are organized in such a way that they can be *multiplied* together, then multiply them and create a matrix with that information in it.

Determine whether the following operations can be performed on the following operations. If the problem is unsolvable, say why. If it is solvable, solve it ☺

16. $\begin{bmatrix} 2 \\ 3 \end{bmatrix} + \begin{bmatrix} 5 \\ 8 \end{bmatrix} =$

17. $4 \times \begin{bmatrix} 4 \\ 3 \end{bmatrix} - 5 \begin{bmatrix} 9 \\ 10 \end{bmatrix} =$

18. $\begin{bmatrix} 4 & 15 \\ 8 & 16 \end{bmatrix} + \begin{bmatrix} 23 \\ 42 \end{bmatrix} =$

19. $3 \times \begin{bmatrix} 5 & 2 & 7 \\ 6 & 4 & 12 \end{bmatrix} =$

20. $\begin{bmatrix} 3 & 4 & 7 \\ 0 & 1 & 0 \end{bmatrix} \times \begin{bmatrix} 3 & 2 \\ 7 & 6 \end{bmatrix} =$

21. $\begin{bmatrix} 0 & 9 & 5 \end{bmatrix} \times \begin{bmatrix} 3 \\ 6 \\ 8 \end{bmatrix} =$

22. Circle the following dimensions that can be multiplied together, then state what the dimensions of the answer matrix will be:

2×3 and 3×4 3×2 and 3×2 4×5 and 5×4 7×7 and 7×7 1×5 and 5×6 1×3 and 2×3