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HW 9-4 HONORS: Multiplying Matrices

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

1. $A: 1 \times 3, B: 3 \times 2$ *yes 1×2*

3. $A: 4 \times 2, B: 3 \times 5$ *Not possible*

5. $A: 3 \times 4, B: 4 \times 1$ *yes 3×1*

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

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

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

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

7. $\begin{bmatrix} -\frac{1}{6} & \frac{1}{2} & -\frac{1}{3} \end{bmatrix} \begin{bmatrix} 12 \\ 0 \\ -12 \end{bmatrix} = [2]$

8. $\begin{bmatrix} 7.3 & 1.5 \\ 1.8 & 0 \\ 2.9 & 3.2 \end{bmatrix} \begin{bmatrix} -4.2 & 2.6 & -8.7 \end{bmatrix}$

9. $\begin{bmatrix} 1 & -4 \\ 3 & -2 \end{bmatrix}^2 = \begin{bmatrix} -11 & 4 \\ -3 & -8 \end{bmatrix}$

10. $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix} \cdot \begin{bmatrix} -7 & 8 \\ 5 & 4 \end{bmatrix}$

11. $\begin{bmatrix} 2 & -8 & 1 \\ 0 & -5 & 2 \end{bmatrix} \begin{bmatrix} 0 & 1 & -2 \\ 8 & -2 & -5 \end{bmatrix}$ *Not possible*

12. $\begin{bmatrix} 4 & 0 \\ -3 & 7 \\ -5 & 9 \end{bmatrix} \cdot \begin{bmatrix} 6 & 4 \\ -2 & 1 \end{bmatrix}$

13. $\begin{bmatrix} 4 & -2 & -7 \\ 6 & 3 & 5 \end{bmatrix} \cdot \begin{bmatrix} -2 \\ 5 \\ 3 \end{bmatrix} = \begin{bmatrix} -39 \\ 18 \end{bmatrix}$

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

$$14. \begin{bmatrix} 6 & -2 \\ 1 & 4 \\ 0 & 5 \end{bmatrix} \begin{bmatrix} -4 & -2 & 5 \\ 4 & -6 & -1 \end{bmatrix}$$

Using the given matrices, simplify the expression.

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

15. $2AB$

$$\begin{bmatrix} 16 & -16 \\ 16 & -8 \end{bmatrix}$$

16. $AB + AC$

17. $D(D+E)$

$$\begin{bmatrix} 8 & -5 & 8 \\ -1 & 1 & 1 \\ 7 & -30 & -35 \end{bmatrix}$$

18. $-3(AC)$

Solve for x and y .

$$19. \begin{bmatrix} -2 & 1 & 2 \\ 3 & 2 & 4 \\ 0 & -2 & 4 \end{bmatrix} \begin{bmatrix} 1 \\ x \\ 3 \end{bmatrix} = \begin{bmatrix} 6 \\ 19 \\ y \end{bmatrix}$$

$$20. \begin{bmatrix} 4 & 1 & 3 \\ -2 & x & 1 \end{bmatrix} \begin{bmatrix} 9 & -2 \\ 2 & 1 \\ -1 & 4 \end{bmatrix} = \begin{bmatrix} y & 5 \\ -13 & 11 \end{bmatrix}$$

$$x=2$$
$$y=8$$