

Math Sheet

Name _____ Score _____ / 6 Teacher _____ Date _____

Matrix Multiplication

Evaluate each expression. If it is undefined, explain which dimensions do not match.

1. $A \times B$

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

2. $A \times B$

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

3. $A \times B$

$$A = \begin{bmatrix} 4 & -2 & 5 \end{bmatrix} \quad B = \begin{bmatrix} -6 \\ 2 \end{bmatrix}$$

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Matrix Multiplication

Evaluate each expression. If it is undefined, explain which dimensions do not match.

4. $A \times B$

$$A = \begin{bmatrix} 6 & -6 & -6 \\ -3 & 2 & 3 \end{bmatrix} \quad B = \begin{bmatrix} 3 \\ -2 \\ -5 \end{bmatrix}$$

5. $A \times B$

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

6. $A \times B$

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

Matrix Multiplication

Answer Key

Evaluate each expression. If it is undefined, explain which dimensions do not match.

1. $A \times B$

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

Answer

Undefined: $(3 \times 4) \times (1 \times 3)$. Multiplication needs matching inner dimensions.

2. $A \times B$

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

Answer

$$\begin{bmatrix} -14 & -7 & -12 \end{bmatrix}$$

Result dimensions: 1×3

3. $A \times B$

$$A = \begin{bmatrix} 4 & -2 & 5 \end{bmatrix} \quad B = \begin{bmatrix} -6 \\ 2 \end{bmatrix}$$

Answer

Undefined: $(1 \times 3) \times (2 \times 1)$. Multiplication needs matching inner dimensions.

Matrix Multiplication

Answer Key

Evaluate each expression. If it is undefined, explain which dimensions do not match.

4. $A \times B$

$$A = \begin{bmatrix} 6 & -6 & -6 \\ -3 & 2 & 3 \end{bmatrix} \quad B = \begin{bmatrix} 3 \\ -2 \\ -5 \end{bmatrix}$$

Answer

$$\begin{bmatrix} 60 \\ -28 \end{bmatrix}$$

Result dimensions: 2×1

5. $A \times B$

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

Answer

$$\begin{bmatrix} -23 & 11 \\ 1 & -7 \\ 20 & -10 \end{bmatrix}$$

Result dimensions: 3×2

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Matrix Multiplication

Answer Key

Evaluate each expression. If it is undefined, explain which dimensions do not match.

6. $A \times B$

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

Answer

Undefined: $(3 \times 1) \times (4 \times 3)$. Multiplication needs matching inner dimensions.