Question 1

Correct

Mark 1.00 out of 1.00

Flag question

The sizes of two matrices A and B are given. Find the sizes of the product AB and the product BA, if the products are defined.

A is 2 × 1, B is 1 × 1.

a. AB is undefined, BA is 1× 2.
b. AB is 1 × 2, BA is 1 × 1.
c. AB is 2 × 1, BA is undefined. ✔
d. AB is 2 × 2, BA is 1 × 1.

The correct answer is: AB is 2 × 1, BA is undefined.

Question **2**

Correct

Mark 1.00 out of 1.00

Flag question

Solve the system of equations.

$x_1 - x_2 + x_3 = 8$

$x_1 + x_2 + x_3 = 6$

$x_1 + x_2 - x_3 = -12$

a. (-2, -1, -9)

b. (2, -1, 9)

c. (2, -1, -9)

d. (-2, -1, 9) ✔

The correct answer is: (-2, -1, 9)

Question **3**

Correct

Mark 1.00 out of 1.00

Flag question

Determine whether the system is consistent.

$x_1 + x_2 + x_3 = 6$

$x_1 - x_3 = -2$

$x_2 + 3x_3 = 11$

a. No

b. Yes ✔

The correct answer is: Yes

Question **4**

Correct

Mark 1.00 out of 1.00

Flag question

Perform the matrix operation.

Let $A = \begin{bmatrix} 2 & -4 \\ -2 & -5 \\ 3 & 5 \end{bmatrix}$ and $B = \begin{bmatrix} 9 & -8 \\ -6 & -6 \\ -7 & -4 \end{bmatrix}$. Find A + B.

a. $\begin{bmatrix} -7 & 4 \\ 4 & 4 \\ 10 & -4 \end{bmatrix}$

b. $\begin{bmatrix} 11 & -12 \\ 8 & -5 \\ -4 & -1 \end{bmatrix}$

c. $\begin{bmatrix} 11 & -5 \\ -8 & -11 \\ -4 & 1 \end{bmatrix}$

d. ✔ $\begin{bmatrix} 11 & -12 \\ -8 & -11 \\ -4 & 1 \end{bmatrix}$

The correct answer is:

$\begin{bmatrix} 11 & -12 \\ -8 & -11 \\ -4 & 1 \end{bmatrix}$

Question **5**

Incorrect

Mark 0.00 out of 1.00

Flag question

Determine whether the matrix is in echelon form, reduced echelon form, or neither.

$$\begin{bmatrix} 1 & 6 & 2 & -7 \\ 0 & 1 & -4 & -6 \\ 0 & 0 & 0 & 0 \end{bmatrix}$$

a. Reduced echelon form ✖

b. Neither

c. Echelon form

The correct answer is: Echelon form

Question **6**

Correct

Mark 1.00 out of 1.00

Flag question

Decide whether or not the matrices are inverses of each other.

$$\begin{bmatrix} 6 & -5 \\ -3 & 5 \end{bmatrix} \text{ and } \begin{bmatrix} \frac{1}{3} & \frac{1}{3} \\ \frac{1}{5} & \frac{2}{5} \end{bmatrix}$$

a. Yes ✔

b. No

Question **7**

Incorrect

Mark 0.00 out of 1.00

Flag question

The augmented matrix is given for a system of equations. If the system is consistent, find the general solution. Otherwise state that there is no solution.

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

a. $x_1 = 5 - 2x_2 + 3x_3$ ✖
$x_2 = -5 - 4x_3$
x_3 is free

b. $x_1 = 15 + 11x_3$
$x_2 = -5 - 4x_3$
$x_3 = 0$

c. $x_1 = 5 - 2x_2 + 3x_3$
x_2 is free
x_3 is free

d. $x_1 = 15 + 11x_3$
$x_2 = -5 - 4x_3$
x_3 is free

The correct answer is: $x_1 = 15 + 11x_3$
$x_2 = -5 - 4x_3$
x_3 is free

Question **8**

Correct

Mark 1.00 out of 1.00

Flag question

Find the matrix product AB, if it is defined.

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

a. $\begin{bmatrix} -8 & -6 \\ 4 & 6 \end{bmatrix}$

b. $\begin{bmatrix} 0 & 6 \\ -4 & 3 \end{bmatrix}$

c. $\begin{bmatrix} -3 & 3 \\ -5 & -11 \end{bmatrix}$

d. $\begin{bmatrix} 3 & -3 \\ -11 & 3 \end{bmatrix}$ ✔

The correct answer is:

$\begin{bmatrix} 3 & -3 \\ -11 & 3 \end{bmatrix}$

Question 9

Correct

Mark 1.00 out of 1.00

Flag question

Find the inverse of the matrix, if it exists.

$$\begin{bmatrix} 1 & 0 & 0 \\ -1 & 1 & 0 \\ 1 & 1 & 1 \end{bmatrix}$$

a. $\begin{bmatrix} 1 & -1 & 1 \\ 0 & 1 & -1 \\ 0 & 0 & 1 \end{bmatrix}$

b. ✔ $\begin{bmatrix} 1 & 0 & 0 \\ 1 & 1 & 0 \\ -2 & -1 & 1 \end{bmatrix}$

c. $\begin{bmatrix} -1 & 0 & 0 \\ -1 & -1 & 0 \\ -1 & -1 & -1 \end{bmatrix}$

d. $\begin{bmatrix} 1 & 1 & 1 \\ 0 & 1 & 1 \\ 0 & 0 & 1 \end{bmatrix}$

The correct answer is:

$$\begin{bmatrix} 1 & 0 & 0 \\ 1 & 1 & 0 \\ -2 & -1 & 1 \end{bmatrix}$$

Question **10**

Incorrect

Mark 0.00 out of 1.00

Flag question

Solve the problem.

Let $A = \begin{bmatrix} 1 & -3 & 2 \\ -2 & 5 & -1 \\ 3 & -4 & 5 \end{bmatrix}$ and $\mathbf{b} = \begin{bmatrix} b_1 \\ b_2 \\ b_3 \end{bmatrix}$.

Determine if the equation Ax = b is consistent for all possible b_1, b_2, b_3. If the equation is not consistent for all possible b_1, b_2, b_3, give a description of the set of all **b** for which the equation is consistent (i.e., a condition which must be satisfied by b_1, b_2, b_3).

a. Equation is consistent for all b_1, b_2, b_3 satisfying $-3b_1 + b_3 = 0$.

b. Equation is consistent for all b_1, b_2, b_3 satisfying $7b_1 + 5b_2 + b_3 = 0$. ✖

c. Equation is consistent for all possible b_1, b_2, b_3.

d. Equation is consistent for all b_1, b_2, b_3 satisfying $2b_1 + b_2 = 0$.

The correct answer is: Equation is consistent for all possible b_1, b_2, b_3.

Question 11

Incorrect

Mark 0.00 out of 1.00

Flag question

Use the row reduction algorithm to transform the matrix into echelon form or reduced echelon form as indicated.

Find the reduced echelon form of the given matrix.

$$\begin{bmatrix} 1 & 4 & -5 & 1 & 2 \\ 2 & 5 & -4 & -1 & 4 \\ -3 & -9 & 9 & 2 & 10 \end{bmatrix}$$

a.

$$\begin{bmatrix} 1 & 0 & 3 & 0 & 26 \\ 0 & 1 & -2 & 0 & -8 \\ 0 & 0 & 0 & 1 & 8 \end{bmatrix}$$

b. ✖

$$\begin{bmatrix} 1 & 4 & -5 & 1 & 2 \\ 0 & 1 & -2 & 1 & 0 \\ 0 & 0 & 0 & 1 & 8 \end{bmatrix}$$

c.

$$\begin{bmatrix} 1 & 0 & 0 & 0 & 26 \\ 0 & 1 & 0 & 0 & -8 \\ 0 & 0 & 0 & 1 & 8 \end{bmatrix}$$

d.

$$\begin{bmatrix} 1 & 4 & -5 & 0 & -6 \\ 0 & 1 & -2 & 0 & -8 \\ 0 & 0 & 0 & 1 & 8 \end{bmatrix}$$

The correct answer is:

$$\begin{bmatrix} 1 & 0 & 3 & 0 & 26 \\ 0 & 1 & -2 & 0 & -8 \\ 0 & 0 & 0 & 1 & 8 \end{bmatrix}$$

Question **12**

Correct

Mark 1.00 out of 1.00

Flag question

Find the transpose of the matrix.

$$\begin{bmatrix} 7 & 4 & 7 & 4 \\ 0 & -7 & 0 & -7 \end{bmatrix}$$

a. $\begin{bmatrix} 4 & 7 & 4 & 7 \\ -7 & 0 & -7 & 0 \end{bmatrix}$

b. $\begin{bmatrix} 0 & 7 \\ -7 & 4 \\ 0 & 7 \\ -7 & 4 \end{bmatrix}$

c. $\begin{bmatrix} 0 & -7 & 0 & -7 \\ 7 & 4 & 7 & 4 \end{bmatrix}$

d. ✔ $\begin{bmatrix} 7 & 0 \\ 4 & -7 \\ 7 & 0 \\ 4 & -7 \end{bmatrix}$

The correct answer is:

$$\begin{bmatrix} 7 & 0 \\ 4 & -7 \\ 7 & 0 \\ 4 & -7 \end{bmatrix}$$