

KEY

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Linear Systems & STAT – Examination One Review – Matrices

Name:

Date:

Period:

1. Create a 4x5 matrix.

$$\begin{bmatrix} 1 & 2 & 3 & 4 & 5 \\ 2 & \cdot & \cdot & \cdot & \cdot \\ 3 & \textcircled{8} & \cdot & \cdot & \cdot \\ 4 & \cdot & \cdot & \cdot & \cdot \end{bmatrix}$$

2. If this matrix is named M, identify element $M_{3,2}$

8

Given the following matrices, answer questions 3-8.

$$A = \begin{pmatrix} 2 & -3 \\ -4 & 7 \end{pmatrix} \quad B = \begin{pmatrix} 1 & 0 \\ 5 & -9 \end{pmatrix} \quad C = \begin{pmatrix} 2 & 3 \\ 1 & -3 \\ 4 & 5 \end{pmatrix}$$

3. What is the dimension of B?

2x2

4. Add matrices B and A.

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

5. Multiply matrix C by -3

$$\begin{bmatrix} -6 & -9 \\ -3 & 9 \\ -12 & -15 \end{bmatrix}$$

6. Identify element $C_{2,1}$ and explain how you know this.

1, 2nd Row 1st column

7. Create a matrix D to add to matrix C.

$$\begin{bmatrix} 1 & 1 \\ 2 & 2 \\ 3 & 3 \end{bmatrix}$$

8. Find the difference of matrices C and D.

C-D or D-C

9. Create a matrix that you can add to matrix E to get matrix F.

$$E = \begin{bmatrix} 1 & 2 \\ 4 & 2 \end{bmatrix} \quad F = \begin{bmatrix} 3 & 1 \\ 3 & 10 \end{bmatrix}$$

$$E + [?] = F$$

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

10. Multiply matrix G and matrix H. $G = \begin{bmatrix} \Delta & \Sigma \\ \Theta & X \end{bmatrix}$ $H = \begin{bmatrix} \Phi & \Lambda \\ X & \lambda \end{bmatrix}$

$$\begin{bmatrix} \Delta\Phi + \Sigma X & \Delta^2 + \Sigma\lambda \\ \Theta^2 + X^2 & \Delta\Theta + X\lambda \end{bmatrix}$$

11. Create a matrix J that you can multiply by matrix M from question 2.

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

5x?

12. Find M * J

$$\begin{bmatrix} \cdot & \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot & \cdot \end{bmatrix} \begin{bmatrix} \cdot & \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot & \cdot \end{bmatrix}$$

M

J

Answers 4x?

KEY

2

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13. Create a product to change matrix K so the new matrix has elements that are all

Integers. $K = \begin{pmatrix} \frac{1}{5} & \frac{2}{5} \\ \frac{3}{5} & \frac{-1}{5} \\ \frac{4}{10} & \frac{4}{5} \end{pmatrix}$ i.e. $5 \begin{bmatrix} \\ \\ \end{bmatrix} = \begin{bmatrix} 1 & 2 \\ 3 & -1 \\ 2 & 4 \end{bmatrix}$

14. Two softball teams submit equipment lists to their sponsors as shown below. Each bat costs \$48, each ball costs \$4 and each glove costs \$42. Create two matrices and use their product get the total cost of equipment for each team.

	Woman's Team	Men's Team
Bats	12	15
Balls	45	38
Gloves	15	17

15. $\begin{bmatrix} 48 & 4 & 42 \end{bmatrix} \begin{bmatrix} 12 & 15 \\ 45 & 38 \\ 15 & 17 \end{bmatrix} = \begin{bmatrix} 1386 & 1586 \end{bmatrix}$

If $\triangle ABC$ is defined by the matrix

$P = \begin{bmatrix} -7 & 4 & 2 \\ 3 & -1 & 6 \end{bmatrix}$, what are the coordinates

of $\triangle ABC$ after it has been reflected

using the reflection matrix $\begin{bmatrix} 1 & 0 \\ 0 & -1 \end{bmatrix}$?

$\begin{pmatrix} -7, 3 \\ 4, -1 \\ 2, 6 \end{pmatrix} \rightarrow \begin{pmatrix} -7, -3 \\ 4, 1 \\ 2, -6 \end{pmatrix}$