



Practice with Matrices

Please choose the best answer to each of the following questions.

1. What is the value of $r_{2\ 1}$? $R = \begin{bmatrix} 5 & 0 & 1 \\ -3 & 8 & 4 \\ 2 & 10 & 9 \end{bmatrix}$

0

-3

10

4

2. What type of matrix is C? $C = \begin{bmatrix} 4 & 2 & -7 \end{bmatrix}$

Determinant

Row vector

Column vector

Tensor

3. Which of these is an identity matrix?

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

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

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

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

$$[1 \quad 1 \quad 1]$$

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

4. Which matrix represents A^T

$$A = \begin{bmatrix} 4 & 3 & 7 \\ 2 & -6 & 0 \end{bmatrix}$$

$$\begin{bmatrix} 7 & 3 & 4 \\ 0 & -6 & 2 \end{bmatrix}$$

$$\begin{bmatrix} 2 & -6 & 0 \\ 4 & 3 & 7 \end{bmatrix}$$

$$\begin{bmatrix} 4 & -6 \\ 2 & 7 \\ 3 & 0 \end{bmatrix}$$

$$\begin{bmatrix} 4 & 2 \\ 3 & -6 \\ 7 & 0 \end{bmatrix}$$

5. What are the dimensions of matrix M?

$$M = \begin{bmatrix} 5 & 7 & 2 \\ 0 & 4 & 1 \end{bmatrix}$$

2 x 6

2 x 3

3 x 2

6 x 2

6. Which of these are triangular matrices?

$$R = \begin{bmatrix} 4 & 0 & 0 \\ 7 & 6 & 0 \\ -1 & 2 & 9 \end{bmatrix} \quad S = \begin{bmatrix} 6 & 4 & 8 \\ 0 & 7 & 3 \\ 0 & 0 & -2 \end{bmatrix}$$

$$T = \begin{bmatrix} 0 & 7 & 5 \\ 6 & 0 & 9 \\ -4 & 8 & 0 \end{bmatrix} \quad U = \begin{bmatrix} 0 & 0 & 0 \\ 2 & 0 & 0 \\ 1 & 3 & 0 \end{bmatrix}$$

R only

R and S

R, S, and T

R, S, and U

7. Which of these are diagonal matrices?

$$M = \begin{bmatrix} 8 & 0 \\ 0 & -4 \end{bmatrix}$$

$$N = \begin{bmatrix} 8 & 0 \\ 0 & -4 \\ 2 & 0 \end{bmatrix}$$

$$P = \begin{bmatrix} 6 & 2 & -1 \\ 2 & 6 & 2 \\ -1 & 2 & 6 \end{bmatrix}$$

$$Q = \begin{bmatrix} 9 & 0 & 0 \\ 0 & 4 & 0 \\ 0 & 0 & 3 \end{bmatrix}$$

M and Q

M and N

P and Q

P only

8. Which of these could be a zero matrix?

A 4 x 4 matrix with 4 zero elements

A 4 x 4 matrix with all zeros on its diagonal and 1's everywhere else

A 4 x 4 matrix with 8 zero elements

A 4 x 4 matrix with 16 zero elements

9. Which of these could be a matrix equivalent to G?

$$G = \begin{bmatrix} 5 & 8 & 2 \\ 7 & 0 & 6 \end{bmatrix}$$

The identity matrix

A 2 x 3 matrix

A 3 x 2 matrix

The transposition of G

10. Which of these is not a square matrix?

4 x 4 matrix

4 x 9 matrix

9 x 9 matrix

The identity matrix