وزارة التــعلــيم العالـــي
جامعة الملك سعود
عمادة السنة التحضيرية

ESSAY. Write your answer in the space provided or on a separate sheet of paper.

Determine the order of the matrix.

1) [3]

2) $\begin{bmatrix} 3 & -5 & 8 & 7 \end{bmatrix}$

3) $\begin{bmatrix} 5 & 7 \\ -5 & 1 \end{bmatrix}$

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

5) $\begin{bmatrix} -9 \\ -1 \\ 7 \end{bmatrix}$

6) $\begin{bmatrix} 1 & -7 \\ 6 & 0 \\ -6 & 8 \\ 7 & -1 \end{bmatrix}$

7) $\begin{bmatrix} 3.1 & 7 & 1 & -6 \\ -4 & 9 & -1 & 8.5 \end{bmatrix}$

8) $\begin{bmatrix} 2 & \pi & 4 \\ -1 & 5 & -5 \\ e & 8 & -4 \end{bmatrix}$

Identify the indicated entry in matrix A.

9) $A = \begin{bmatrix} 7 & 8 & 9 & 2 \\ 5 & 2 & 4 & 2 \end{bmatrix}$; identify a_{12}.

10) $A = \begin{bmatrix} 7 & 0 & 4 & 1 \\ 7 & 5 & 6 & 4 \\ 1 & 3 & 4 & 3 \end{bmatrix}$; identify a_{32}.

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Write the system of linear equations represented by the augmented matrix. Use x, y, and z as the variables.

11) $\begin{bmatrix} 1 & 9 & -3 & | & 4 \\ -2 & -4 & 1 & | & 7 \\ 5 & -3 & 4 & | & 8 \end{bmatrix}$ 11) _____

$$\text{A)} \begin{cases} x + 9y + 3z = 4 \\ -2x + 4y + z = 7 \\ 5x + 3y + 4z = 8 \end{cases} \qquad\qquad \text{B)} \begin{cases} x + 9y + 3z = 4 \\ 2x + 4y + z = 7 \\ 5x + 3y + 4z = 8 \end{cases}$$

$$\text{C)} \begin{cases} x + 9y - 3z = 4 \\ 2x - 4y + z = 7 \\ 5x - 3y + 4z = 8 \end{cases} \qquad\qquad \text{D)} \begin{cases} x + 9y - 3z = 4 \\ -2x - 4y + z = 7 \\ 5x - 3y + 4z = 8 \end{cases}$$

ESSAY. Write your answer in the space provided or on a separate sheet of paper.

12) $\begin{bmatrix} -3 & -9 & 2 & | & 6 \\ 2 & 3 & -5 & | & 9 \end{bmatrix}$

13) $\begin{bmatrix} 1 & -1 & -1 & | & 1 \\ 1 & 1 & -1 & | & 4 \\ 3 & 3 & 1 & | & 7 \\ -3 & 5 & -1 & | & 9 \end{bmatrix}$

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Solve the system of equations by Gaussian elimination.

14) $\begin{cases} -6x + 8y = 72 \\ 2x + 6y = 54 \end{cases}$ 14) _____

A) {(0, 10)}   B) {(0, 9)}   C) {(-1, 10)}   D) ∅

ESSAY. Write your answer in the space provided or on a separate sheet of paper.

15) $\begin{cases} 4x + 4 = 8y \\ 2x - 4y = -2 \end{cases}$

Find the values of x and y.

16) $\begin{bmatrix} x \\ 1 \end{bmatrix} = \begin{bmatrix} 9 \\ y \end{bmatrix}$

17) $\begin{bmatrix} 10x \\ 24 \end{bmatrix} = \begin{bmatrix} 8 \\ 6y \end{bmatrix}$

18) $\begin{bmatrix} x + 3 & y + 4 \\ 7 & -6 \end{bmatrix} = \begin{bmatrix} 6 & -4 \\ 7 & -6 \end{bmatrix}$

19) $\begin{bmatrix} 5x+y & 1 & 7 \\ 2 & 25 & -4 \\ -3 & x-8y & 8 \end{bmatrix} = \begin{bmatrix} -46 & 1 & 7 \\ 2 & 25 & -4 \\ -3 & 40 & 8 \end{bmatrix}$

Find the indicated matrix.

20) A - B, where A = $\begin{bmatrix} -1 & 0 \\ 3 & 3 \end{bmatrix}$, B = $\begin{bmatrix} -1 & 3 \\ 3 & 1 \end{bmatrix}$

21) 3A, where A = $\begin{bmatrix} -3 & 3 \\ 0 & 2 \end{bmatrix}$

22) -4A - 2B, where A = $\begin{bmatrix} 9 & -9 & -1 \\ 5 & 9 & 1 \\ -8 & -8 & -6 \end{bmatrix}$, B = $\begin{bmatrix} 2 & 6 & -8 \\ 1 & -8 & 7 \\ 4 & -3 & 9 \end{bmatrix}$

23) X, where B + X = A, A = $\begin{bmatrix} -1 & 3 \\ 0 & 4 \\ 8 & -4 \end{bmatrix}$, B = $\begin{bmatrix} 2 & 1 \\ 7 & 4 \\ 1 & 2 \end{bmatrix}$

24) X, where X - A = B, A = $\begin{bmatrix} 8 & -7 \\ -4 & -9 \\ 7 & 6 \end{bmatrix}$, B = $\begin{bmatrix} 4 & -6 \\ -3 & 7 \\ -8 & -7 \end{bmatrix}$

25) X, where 2X + 3A = B, A = $\begin{bmatrix} 4 & 2 & 1 \\ 1 & -3 & 2 \end{bmatrix}$, B = $\begin{bmatrix} 2 & -1 & 0 \\ 1 & 3 & -2 \end{bmatrix}$

Find the product AB.

26) A = $\begin{bmatrix} -1 & 3 \\ 3 & 2 \end{bmatrix}$, B = $\begin{bmatrix} -2 & 0 \\ -1 & 5 \end{bmatrix}$

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

28) A = $\begin{bmatrix} 3 & -1 \\ 4 & 0 \end{bmatrix}$, B = $\begin{bmatrix} 0 & -1 \\ 2 & 6 \end{bmatrix}$

29) A = $\begin{bmatrix} -1 & 3 \\ 3 & 6 \end{bmatrix}$, B = $\begin{bmatrix} 0 & -2 & 6 \\ 1 & -3 & 2 \end{bmatrix}$

30) A = [-3 2 3], B = $\begin{bmatrix} 8 \\ 0 \\ -3 \end{bmatrix}$

31) A = [1 4 -7], B = $\begin{bmatrix} -9 & 4 & -6 \\ -4 & 8 & 8 \\ 3 & -8 & -9 \end{bmatrix}$