11.1: (MATRICES AND SYSTEMS OF LINEAR EQUATIONS)

If the augmented matrix of a system of linear equations is:

$$\left[\begin{array}{ccc|c} 1 & 2 & 3 & 7 \\ 0 & -x^2 & -4 & -3 \\ 0 & 0 & 4x^2-1 & x-\frac{1}{2} \end{array}\right]$$

then the system is inconsistent if $x =$

A) $-\frac{1}{2}$

B) $\frac{1}{2}$

C) 2

D) $\frac{1}{4}$

E) $-\frac{1}{4}$

The value of k for which the system of equations $\begin{cases} x+kz=1 \\ y+z=2 \\ 2x+y=5 \end{cases}$ is inconsistent equals

A) $-\frac{1}{2}$

B) -1

C) $\frac{3}{2}$

D) $-\frac{3}{2}$

E) $-\frac{5}{2}$

If $\left[\begin{array}{ccc|c} 1 & -3 & 1 & 5 \\ 3 & -7 & 2 & 12 \\ 2 & -6 & k & 10 \end{array}\right]$ is the augmented matrix of a dependent system of linear equations, then $k =$

A) 2

B) 4

C) 7

D) 1

E) 3

If the augmented matrix of a system of equations is $\left[\begin{array}{ccc|c} 1 & 2 & 3 & 4 \\ 0 & 1 & C^2 & 1 \\ 0 & 2 & 8 & C \end{array}\right]$, which one of the following is FALSE?

A) The system is inconsistent for all $C \neq -2$

B) The system is inconsistent for $\mathrm{C} = -2$

C) The system has unique solution for all $C \neq \pm 2$.

D) The system has infinitely many solutions for $C = 2$.

E) The system can be made consistent or inconsistent for a suitable value of C.

If $\left[\begin{array}{ccc|c} 3 & 3 & 4 & -3 \\ 4 & 4 & 2 & 1 \end{array}\right]$ is the augmented matrix of a linear system then the solution set of the system is

A) $\left\{\left(1-c, c, -\frac{3}{2}\right)\right\}$, where c is any real number.

B) $\left\{\left(4,3, -\frac{3}{2}\right)\right\}$

C) $\emptyset$

D) $\{(4-2c, 4-2c, c)\}$, where c is any real number.

E) $(-\infty, \infty)$

If the augmented matrix $\left[\begin{array}{ccc|c} 1 & 1 & 1 & 1 \\ 3 & 4 & -1 & 13 \\ 2 & 2 & 0 & 6 \end{array}\right]$ is written in the echelon form as $\left[\begin{array}{ccc|c} 1 & 1 & 1 & 1 \\ 0 & 1 & k & m \\ 0 & 0 & 1 & n \end{array}\right]$, then $k+m+n=$

A) 4

B) 8

C) 6

D) 16

E) 10

If the echelon form of the augmented matrix $\left[\begin{array}{ccc|c} 1 & 1 & 1 & 2 \\ 3 & 2 & 4 & 5 \\ 2 & 1 & 1 & 6 \end{array}\right]$ is $\left[\begin{array}{ccc|c} 1 & a & b & 2 \\ 0 & 1 & c & 1 \\ 0 & 0 & 1 & -\frac{3}{2} \end{array}\right]$

then $abc =$

A) -1

B) 1

c) $\frac{1}{2}$

D) $-\frac{1}{2}$

E) 2

The linear system whose augmented matrix is $\left[\begin{array}{ccc|c} 1 & -3 & 4 & 1 \\ 2 & -5 & 3 & 6 \\ 1 & -2 & -1 & 5 \end{array}\right]$, has

A) infinitely many solutions

B) no solution

C) one solution $(1,2,1)$

D) one solution $(1,-2,-1)$

E) one solution $(1,6,5)$

If (a, b, c) is the solusion of the system $\begin{cases} x - 3y + z = 8 \\ 2x - 5y - 3z = 2 \\ x + 4y + z = 1 \end{cases}$, then $a + b + c =$

A) -4

B) -6

C) 6

D) -1

E) 4

If (a, b, c) is the solution of the system $\begin{cases} x - y + 3z = 10 \\ 2x - y + 7z = 24 \\ 3x - 6y + 7z = 21 \end{cases}$ then $a + b + c =$

A) 8

B) 13

C) 6

D) 10

E) 12

If (a, b, c) is the solution of the linear system $\begin{cases} x - 3y + z = 8 \\ 2x - 5y - 3z = 2 \\ x + 4y + z = 1 \end{cases}$ then $5a =$

A) 12

B) -5

C) 8

D) 5

E) 13

If (u, v, w) is the solution of the linear system $\begin{cases} x - z = -3 \\ y + z = 9 \\ x + z = 7 \end{cases}$, then $uvw =$

A) 40

B) 20

C) 11

D) 21

E) 13

The system of linear equation $\begin{cases} x + 2y = 1 \\ x + 3y + z = 4 \\ 2y + 2z = 6 \end{cases}$ has

A) three solutions only

B) no solution

C) a unique solution

D) infinitely many solutions

E) two solutions only

The system of linear equations $\begin{cases} x - 3y + z = 5 \\ -7y + 2z = 12 - 3x \\ 2x - 6y + 2z = 10 \end{cases}$

A) is dependent

B) has three solutions only

C) is independent

D) is inconsistent

E) has two solutions only

If (a, b, c) is the solution of the linear system whose augmented matrix is

$$\left[\begin{array}{ccc|c} 1 & -1 & 2 & 4 \\ 0 & 1 & 2 & 5 \\ -1 & 2 & 1 & 3 \end{array}\right], \text{ then } a + b + c =$$

A) 4

B) -5

C) 0

D) -3

E) 6

Let $\left[\begin{array}{ccc|c} 1 & 2 & 3 & -1 \\ 0 & 1 & 2 & 3 \\ 0 & 0 & k-1 & m-2 \end{array}\right]$ be the augmented matrix of a linear system of equations, then the system is

A) inconsistent if $k = 1$ and $m \neq 2$

B) dependent with infinite number of solutions if $k \neq 1$ and $m = 2$

C) inconsistent if $k \neq 1$ and $m = 2$

D) independent with only one solution if $k = 1$ and $m = 2$

E) dependent with infinite number of solutions if $k \neq 1$ and $m \neq 2$