

1. SEC 9.1 #33.

$$\begin{cases} 2x + 2y + 7z = -1 \\ 2x + y + 2z = 2 \\ 4x + 6y + z = 15 \end{cases} \rightarrow \begin{bmatrix} 2 & 2 & 7 & -1 \\ 2 & 1 & 2 & 2 \\ 4 & 6 & 1 & 15 \end{bmatrix} \rightarrow \begin{bmatrix} 2 & 2 & 7 & -1 \\ 0 & 1 & 5 & -3 \\ 0 & 2 & -13 & 17 \end{bmatrix}$$

$$\rightarrow \begin{bmatrix} 2 & 2 & 7 & -1 \\ 0 & 1 & 5 & -3 \\ 0 & 0 & -23 & 23 \end{bmatrix} \rightarrow \begin{cases} 2x + 4y - 7z = -1 \\ 2x = 2 \rightarrow \boxed{x=1} \\ y + 5(-1) = -3 \rightarrow \boxed{y=2} \end{cases}$$

$$-23z = 23$$

$$\boxed{z = -1}$$

$$\boxed{\text{SOLUTION } (1, 2, -1)}$$

9.5 #18

9.2 #18

#33

9.1 #55

CHECK CALC

2. SEC 9.2 #18.

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

Solution

$$\boxed{(1, -1, 2, -2, 0)}$$

3. SEC 9.2 #18.

$$\begin{cases} 3x - y + 4z = 8 \\ y + 2z = 1 \end{cases} \rightarrow \begin{bmatrix} 3 & -1 & 4 & 8 \\ 0 & 1 & 2 & 1 \end{bmatrix} \leftarrow \text{NO NEED FOR A MATRIX}$$

$$\text{IF } \boxed{y = -2z + 1}$$

$$\text{LET } \boxed{z = z}$$

$$\text{SOLUTION } \boxed{(-2z + 3, -2z + 1, z)}$$

$$\text{OR } \boxed{(-2t + 3, -2t + 1, t)}$$

$$3x - (y + 2z) + 4z = 8$$

$$3x + 2z - 1 + 4z = 8$$

$$3x = -6z + 9$$

$$\boxed{x = -2z + 3}$$

4. SEC 9.5 #18.

$$\begin{cases} 2x - 9y = 5 \\ 3x - 3y = 11 \end{cases}$$

$$x = \frac{\begin{vmatrix} 5 & -9 \\ 11 & -3 \end{vmatrix}}{\begin{vmatrix} 2 & -9 \\ 3 & -3 \end{vmatrix}} = \frac{-15 + 99}{-6 + 27} = \frac{84}{21} = 4$$

$$y = \frac{\begin{vmatrix} 2 & 5 \\ 3 & 11 \end{vmatrix}}{\begin{vmatrix} 2 & -9 \\ 3 & -3 \end{vmatrix}} = \frac{22 - 15}{21} = \frac{7}{21} = \frac{1}{3}$$

$$\boxed{\text{SOLUTION } (4, \frac{1}{3})}$$

1. SEC 9.1 #33.

$$\begin{cases} 2x + 2y + 7z = -1 \\ 2x + y + 2z = 2 \\ 4x + 6y + z = 15 \end{cases} \rightarrow \begin{bmatrix} 2 & 2 & 7 & -1 \\ 2 & 1 & 2 & 2 \\ 4 & 6 & 1 & 15 \end{bmatrix} \rightarrow \begin{bmatrix} 2 & 2 & 7 & -1 \\ 0 & 1 & 5 & -3 \\ 0 & 2 & -13 & 17 \end{bmatrix}$$

$$\rightarrow \begin{bmatrix} 2 & 2 & 7 & -1 \\ 0 & 1 & 5 & -3 \\ 0 & 0 & -23 & 23 \end{bmatrix} \rightarrow \begin{cases} 2x + 4 - 7 = -1 \\ 2x = 2 \rightarrow \boxed{x=1} \end{cases}$$

$$-23z = 23$$

$$\boxed{z = -1}$$

$$\boxed{y = 2}$$

$$\boxed{\text{SOLUTION } (1, 2, -1)}$$

9.5 #18

9.2 #18

#33

9.1 #56

CHECK CALC

2. SEC 9.2 #58.

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

SOLUTION

$$\boxed{(1, -1, 2, -2, 0)}$$

3. SEC 9.2 #18.

$$\begin{cases} 3x - y + 4z = 8 \\ y + 2z = 1 \end{cases} \rightarrow \begin{bmatrix} 3 & -1 & 4 & 8 \\ 0 & 1 & 2 & 1 \end{bmatrix} \leftarrow \text{NO NEED FOR A MATRIX}$$

$$\text{IF } \boxed{y = -2z + 1}$$

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$$\text{OR } \boxed{(-2t + 3, -2t + 1, t)}$$

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$$\boxed{\text{SOLUTION } (4, \frac{1}{3})}$$