

$$1. \begin{aligned} x - 3y + z &= 0 \\ 2y + 3z &= 1 \\ z &= -2 \end{aligned}$$

$$\begin{aligned} 2y + 3(-2) &= 1 \\ 2y - 6 &= 1 \\ 2y &= 7 \\ y &= \frac{7}{2} \end{aligned}$$

$$x - 3\left(\frac{7}{2}\right) + (-2) = 0$$

$$x - \frac{21}{2} - 2 = 0$$

$$x = \frac{21}{2} + 2$$

$$x = \frac{21}{2} + \frac{4}{2} = \frac{25}{2}$$

$$\boxed{\left(\frac{25}{2}, \frac{7}{2}, -2\right)}$$

$$2. \begin{aligned} 3x - y + 2z &= -2 \\ y + 3z &= 3 \\ 2z &= 4 \\ z &= 2 \end{aligned}$$

$$\begin{aligned} y + 3(2) &= 3 \\ y + 6 &= 3 \\ y &= -3 \end{aligned}$$

$$3x - (-3) + 2(2) = -2$$

$$3x + 3 + 4 = -2$$

$$3x + 7 = -2$$

~~$$3x = -9$$~~

~~$$x = -3$$~~

$$3x = -9$$

$$x = -3$$

~~$(-3, -3, 2)$~~

$$\boxed{(-3, -3, 2)}$$

$$3. \begin{aligned} x - y + z &= 0 \\ 2x - 3z &= -1 \\ -x - y + 2z &= -1 \end{aligned}$$

$$\begin{aligned} -2x + 2y - 2z &= 0 \\ + 2x - 3z &= -1 \\ \hline 2y - 5z &= -1 \end{aligned}$$

$$\textcircled{2} \begin{aligned} x - y + z &= 0 \\ 2y - 5z &= -1 \\ -x - y + 2z &= -1 \end{aligned}$$

$$\begin{aligned} x - y + z &= 0 \\ + -x - y + 2z &= -1 \\ \hline -2y + 3z &= -1 \end{aligned}$$

$$\textcircled{3} \begin{aligned} x - y + z &= 0 \\ 2y - 5z &= -1 \\ -2y + 3z &= -1 \end{aligned}$$

$$\begin{aligned} 2y - 5z &= -1 \\ + -2y + 3z &= -1 \\ \hline -2z &= -2 \end{aligned}$$

$$z = 1$$

$$x - 2 + 1 = 0$$

$$x - 1 = 0$$

$$x = 1$$

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

$$\textcircled{4} \begin{aligned} x - y + z &= 0 \\ 2y - 5z &= -1 \\ z &= 1 \end{aligned}$$

$$2y - 5(1) = -1$$

$$2y - 5 = -1$$

$$2y = 4$$

$$y = 2$$