

$$\rightarrow 3x + 4y = -6 \quad | \cdot (-2)$$

$$\rightarrow 2x - 3y = 13 \quad | \cdot 3$$

check:

$$3 \cdot 2 + 4 \cdot (-3) \stackrel{?}{=} -6 \quad \checkmark$$

$$2 \cdot 2 - 3 \cdot (-3) \stackrel{?}{=} 13 \quad \checkmark$$

$$\begin{array}{r} -6x - 8y = 12 \\ 6x - 9y = 39 \end{array} \quad \downarrow +$$

$$\begin{array}{r} -6x - 8y = 12 \\ 0x - 17y = 51 \end{array}$$

$$-6x - 8(-3) = 12$$

$$24 - 12 = 6x$$

$$0x - 17y = 51$$

$$\rightarrow \boxed{y = -3}$$

$$\boxed{2 = x}$$

$$\begin{matrix} x & y \\ [2, & -3] \end{matrix}$$

Matrix

$$\begin{pmatrix} x & y \\ 3 & 4 \\ 2 & -3 \end{pmatrix} \begin{pmatrix} -6 \\ 13 \end{pmatrix} \begin{matrix} \cdot -2 \\ \cdot 3 \end{matrix} \sim \begin{pmatrix} -6 & -8 & | & 12 \\ 6 & -9 & | & 39 \end{pmatrix}$$

$$\sim \begin{pmatrix} -6 & -8 & | & 12 \\ \boxed{0} & -17 & | & 51 \end{pmatrix}$$

$$-6x - 8y = 12$$

$$-17y = 51$$

$$x = 2 \leftarrow y = -3$$

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

Matrix

$$\begin{array}{ccc|c} x & y & z & \\ -3 & & & \\ \hline 1 & -2 & 2 & 5 \\ 2 & -3 & 2 & 5 \\ 3 & 2 & -1 & 2 \end{array}$$

$$\sim \begin{array}{ccc|c} & & & \\ \hline 1 & -2 & 2 & 5 \\ 0 & 1 & -2 & -3 \\ 0 & 8 & -7 & -13 \end{array}$$

$$\sim \begin{array}{ccc|c} & & & \\ \hline 1 & -2 & 2 & 5 \\ 0 & 1 & -2 & -5 \\ 0 & 0 & 9 & 27 \end{array}$$

$$9z = 27$$

$$x - 2y + 2z = 5$$

$$y - 2z = -5$$

$$x - 2 + 6 = 5$$

$$\boxed{z = 3}$$

$$y - 6 = -5$$

$$\boxed{y = 1}$$

$$\boxed{x = 1}$$