Quiz 1 Solution.

The augmented matrix is $\begin{pmatrix} 3 & 0 & -6 & 3 \\ 2 & 3 & 5 & -4 \\ -1 & -1 & -1 & 1 \end{pmatrix}$.

$\frac{1}{3}\cdot(\text{Row}1)$: $\begin{pmatrix} 1 & 0 & -2 & 1 \\ 2 & 3 & 5 & -4 \\ -1 & -1 & -1 & 1 \end{pmatrix}$ | Row3 → Row3 + Row1 $\begin{pmatrix} 1 & 0 & -2 & 1 \\ 2 & 3 & 5 & -4 \\ 0 & -1 & -3 & 2 \end{pmatrix}$

Row 2 → Row2 + (-2)×(Row1) $\begin{pmatrix} 1 & 0 & -2 & 1 \\ 0 & 3 & 9 & -6 \\ 0 & -1 & -3 & 2 \end{pmatrix}$ | $\frac{1}{3}$(Row2) : $\begin{pmatrix} 1 & 0 & -2 & 1 \\ 0 & 1 & 3 & -2 \\ 0 & -1 & -3 & 2 \end{pmatrix}$

Row3 → Row3 + Row2

$\begin{pmatrix} 1 & 0 & -2 & 1 \\ 0 & 1 & 3 & -2 \\ 0 & 0 & 0 & 0 \end{pmatrix}$ ⟹ The equation becomes

$X_1 - 2X_3 = 1$

$X_2 + 3X_3 = -2$.

So, $\begin{pmatrix} X_1 \\ X_2 \\ X_3 \end{pmatrix} = \begin{pmatrix} 2X_3 + 1 \\ -3X_3 - 2 \\ X_3 \end{pmatrix} = X_3 \cdot \begin{pmatrix} 2 \\ -3 \\ 1 \end{pmatrix} + \begin{pmatrix} 1 \\ -2 \\ 0 \end{pmatrix}$.

Solution in parametric form : $\begin{pmatrix} 1 \\ -2 \\ 0 \end{pmatrix} + X_3 \begin{pmatrix} 2 \\ -3 \\ 1 \end{pmatrix}$ ⇒ (2 pts).

- Starting w/ a wrong matrix : max 3pts.
- Mistakes : -2 pts. (very) Minor mistake at the end : -1 pt.