

Given $A = \begin{bmatrix} 3 & 1 & -4 \\ 6 & 9 & -2 \\ -1 & 2 & 1 \end{bmatrix}$

determinant = $\begin{vmatrix} 3 & 1 & -4 \\ 6 & 9 & -2 \\ -1 & 2 & 1 \end{vmatrix} = \begin{vmatrix} 9 & -2 \\ 2 & 1 \end{vmatrix} - 13$

$9(9 \times 1) - (-2 \times 2) = 13$

$\begin{vmatrix} 6 & -2 \\ -1 & 1 \end{vmatrix} - 12$

$-(6 \times 1) - (-2 \times -1) = 12$

$(6 \times 2) - (9 \times -1) = 21$

$(3 \times 13) - (-1 \times 12) - (-4 \times 21) = \begin{vmatrix} 6 & 9 \\ -1 & 2 \end{vmatrix} - 21$

$39 - 12 - 84 = -57$

The determinant = -57

2) $\begin{cases} x + y - z = 1 & z = 2y - 8 \\ 3x - 2y + z = -5 \end{cases}$

$x + 3y - 2z = 14 \rightarrow$ Solve for $z = (-3y + 2z + 14) +$
 $-9 + -4 + 14 = 1 \quad y - z = 6$

$x = -3y + 2z + 14 = (-3(3) + 2(-2) + 14) = -2y + z = -8$

$z = 2y - 8 = 2(3) - 8 = -2$

$(-3(3) + 2(-2) + 14) - 2(3) + 2 = -5$

$y = 3$

$-11(3) + 7(2) = -47$

ANSWER

$x = 1 \quad y = 3 \quad z = -2$