

$$3x - 4y + 2z = 18$$

3.7  
Cramers  
Rule

$$4x + y - 5z = -13$$

$$2x - 3y + z = 11$$

$$X = \frac{\begin{vmatrix} 18 & -4 & 2 & 18 & -4 \\ -13 & 1 & -5 & -13 & 1 \\ 11 & -3 & 1 & 11 & -3 \end{vmatrix}}{\begin{vmatrix} 3 & -4 & 2 & 3 & -4 \\ 4 & 1 & -5 & 4 & 1 \\ 2 & -3 & 1 & 2 & -3 \end{vmatrix}}$$

$(18 + 220 + 78) - (22 + 270 + 52)$   
 $316 - 344$   
 $\frac{-28}{-14} = 2$

$(3 + 40 + -24) - (4 + 45 + 16)$   
 $19 - 33$   
 $(-39 - 180 + 88) - (-52 - 165 + 72)$   
 $-131 - 145$   
 $\frac{14}{-14} = -1$

$$Y = \frac{\begin{vmatrix} 3 & 18 & 2 & 3 & 18 \\ 4 & -13 & -5 & 4 & -13 \\ 2 & 11 & 1 & 2 & 11 \end{vmatrix}}{\begin{vmatrix} 3 & -4 & 2 & 3 & -4 \\ 4 & 1 & -5 & 4 & 1 \\ 2 & -3 & 1 & 2 & -3 \end{vmatrix}}$$

From the first part the denominator  
 $-14$

$$-14$$

$$Z = \left| \begin{array}{ccc|cc} 3 & -4 & 18 & 3 & -4 \\ 4 & 1 & -13 & 4 & 1 \\ 2 & -3 & 11 & 2 & -3 \end{array} \right|$$

$\begin{matrix} 36 & 117 & -176 \\ 33 & 104 & -216 \end{matrix}$

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-14

$$(36+117-176) - (33+104-216)$$

$$-23 - -79$$

$$\frac{56}{-14} = -4$$

Solution

$$\left( \begin{array}{ccc} 2 & -1 & 4 \\ x & y & z \end{array} \right)$$