$0.1x + 7y = 0.5z = 71.4$

$0.3x - 0.2y + 10z = 71.4$

$3x = 7.85 + 0.1y + 0.2z$

$x = \frac{7.85}{3} + \frac{0.1y}{3} + \frac{0.2z}{3}$

$7y = -19.3 - 0.1\left(\frac{7.85}{3} + \frac{0.1y}{3} + \frac{0.2z}{3}\right) + 0.3z$

$7y = -19.3 - 0.26 - 0.003y - 0.006z + 0.3z$

$7y = -19.56 - 0.003y + 0.294z$

$7.003y = -19.56 + 0.294z$

$y = -\frac{19.56}{7.003} + \frac{0.294z}{7.003} \Rightarrow y = -2.79 + 0.042z$

$x = \frac{7.85}{3} + \frac{0.1(-2.79 + 0.042z)}{3} + \frac{0.2z}{3}$

$x = 2.61 - 0.0916z + 0.066z \Rightarrow x = 2.61 - 0.0256z$

$10z = 71.4 - 0.3(2.61 - 0.0256z) + 0.2(-2.79 + 0.042z)$

$10z = 71.4 - 0.775z - 0.5496z \Rightarrow 10z = 71.4 - 1.3246z$

$11.3246z = 71.4 \Rightarrow \boxed{z = 6.3048}$

$x = 2.61 - 0.0256(6.3048) \Rightarrow \boxed{x = 2.448}$

$y = -2.79 + 0.042(6.3048) \Rightarrow \boxed{y = -2.525}$

$0.3x - 0.2y + 10z = 71.4$

$\frac{0.1}{3} = 0.033(3 \quad -0.1 \quad -0.2 \quad 7.85)$

$0.1 \quad 7 \quad -0.3 \quad -19.3$
$0.1 \quad -.0003 \quad -.0066 \quad .2590$
$0 \quad 6.999 \quad -.2934 \quad -19.559$

$\frac{0.3}{3} = 0.1(3 \quad -0.1 \quad -.2 \quad 7.85)$

$0.3 \quad -0.2 \quad 10 \quad 71.4$
$0.3 \quad -0.01 \quad -0.02 \quad .785$
$0 \quad -0.19 \quad 10.02 \quad 70.615$

$\begin{bmatrix} 3 & -0.1 & -0.2 \\ 0 & 6.999 & -.2934 \\ 0 & -0.19 & 10.02 \end{bmatrix} \begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 7.85 \\ -19.559 \\ 70.615 \end{bmatrix}$

$\frac{-0.19}{6.999} = -0.027(0 \quad 7 \quad -0.293 \quad -19.559)$

$0 \quad -0.19 \quad 10.03 \quad 63.55$
$0 \quad -0.19 \quad 0.007 \quad .0528$
$0 \quad 0 \quad 10.023 \quad 63.497$

$\begin{bmatrix} 3 & -0.1 & -0.2 \\ 0 & 6.999 & -.293 \\ 0 & 0 & 10.02 \end{bmatrix} \begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 7.85 \\ -21.89 \\ 63.497 \end{bmatrix}$

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$$\begin{bmatrix} 3 & -0.1 & -0.2 \\ 0 & 6.999 & -.293 \\ 0 & 0 & 10.02 \end{bmatrix} \begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 7.85 \\ -21.89 \\ 63.497 \end{bmatrix}$$

$10.02z = 63.65 \Rightarrow z = \frac{63.497}{10.02} = z = 6.22$

$6.999y - .293z = -21.89 \Rightarrow y = \frac{-21.89 + .293z}{6.999} \Rightarrow y = -2.862$

$3x - 0.1y - 0.2z = 7.85 \Rightarrow x = \frac{7.85 + 0.1y + 0.2z}{3} \Rightarrow x = 2.9440$