

$$\begin{aligned}
 1. \quad & 2x + 3y - z = 1 \\
 & 3x - 2y - 4z = -3 \\
 & 5x - y - 2z = 4.
 \end{aligned}
 \quad R = \quad
 \begin{aligned}
 & x = -0.957 \\
 & y = 0.325 \\
 & z = 0.176.
 \end{aligned}$$

$$\Delta_s = \begin{vmatrix} 2 & 3 & -1 \\ 3 & -2 & -4 \\ 5 & -1 & -2 \end{vmatrix} = (8 + 3 - 630) - (10 + 84 - 18) = \\
 = (-619) - (76) \\
 = -619 + 76 = -543.$$

$$\Delta_x = \begin{vmatrix} 1 & 3 & -1 & 3 \\ -3 & -2 & -4 & -3 \\ 4 & -1 & 2 & 4 \end{vmatrix} = (4 - 504 + 12) - (-18 + 42 + 8) \\
 = (-488) - (32) \\
 = -488 - 32 = -520$$

$$\Delta_y = \begin{vmatrix} 2 & 1 & -1 \\ 3 & -3 & -4 \\ 5 & 4 & 2 \end{vmatrix} = (12 - 12 - 210) - (15 - 336 - 6) \\
 = (-210) - (-327) \\
 = -210 + 327 = 117$$

$$\Delta_z = \begin{vmatrix} 2 & 3 & 1 & 2 & 3 \\ 3 & -2 & 3 & 3 & -2 \\ 5 & -1 & 4 & 5 & -1 \end{vmatrix} = (-16 - 45 - 3) - (36 + 6 - 10) \\
 = (-64) - (32) \\
 = -64 - 32 = -96$$

$$x = \frac{\Delta_x}{\Delta_s} = \frac{-520}{-543} = -0.957 \quad z = \frac{\Delta_z}{\Delta_s} = \frac{-96}{-543} = 0.176$$

$$y = \frac{\Delta_y}{\Delta_s} = \frac{117}{-543} = 0.325$$

$$\begin{aligned} 2. \quad & a - b = 6 \\ & b + c = 3 \\ & c + 2d = 4 \\ & 2a - 3d = 5 \end{aligned}$$

$$D = \begin{vmatrix} 1 & -1 & 0 & 0 \\ 0 & 1 & 1 & 0 \\ 0 & 0 & 1 & 2 \\ 2 & 0 & 0 & -3 \end{vmatrix} \quad D_1 = \begin{vmatrix} 6 & -1 & 0 & 0 \\ 3 & 1 & 1 & 0 \\ 4 & 0 & 1 & 2 \\ 5 & 0 & 0 & -3 \end{vmatrix} \quad D_2 = \begin{vmatrix} 1 & 6 & 0 & 0 \\ 0 & 3 & 1 & 0 \\ 0 & 4 & 1 & 2 \\ 2 & 5 & 0 & -3 \end{vmatrix} \quad D_3 = \begin{vmatrix} 1 & -1 & 6 & 0 \\ 0 & 1 & 3 & 0 \\ 0 & 0 & 4 & 2 \\ 2 & 0 & 5 & -3 \end{vmatrix}$$

$$D_4 = \begin{vmatrix} 1 & -1 & 0 & 6 \\ 6 & 1 & 1 & 3 \\ 6 & 0 & 1 & 4 \\ 2 & 0 & 0 & 5 \end{vmatrix} \quad \begin{aligned} D &= 1 \\ D_1 &= -5 \\ D_2 &= -11 \\ D_3 &= 14 \\ D_4 &= -5 \end{aligned} \quad \begin{aligned} a &= \frac{-5}{1} = -5 \\ b &= \frac{-11}{-1} = -11 \\ c &= \frac{14}{1} = 14 \end{aligned}$$

$$\begin{aligned} a &= -5 & (-5) - (-11) &= 6 & d &= \frac{-5}{1} = -5 \\ b &= -11 & (-11) + 14 &= 3 \\ c &= 14 & 14 + 2 \times (-5) &= 4 \\ d &= -5 & 2 \times (-5) - 3 \times (-5) &= 5 \end{aligned}$$

$$\begin{aligned} 6 &= 6 \\ 3 &= 3 \\ 4 &= 4 \\ 5 &= 5 \end{aligned}$$

$$R = \begin{aligned} a &= -5 \\ b &= -11 \\ c &= 14 \\ d &= -5 \end{aligned}$$