ヤコビ法 ちょっと手計算してみよう.

$$\begin{cases} 7x + y + 2z = 10 & \cdots ① \\ x + 8y + 3z = 8 & \cdots ② \\ 2x + 3y + 9z = 6 & \cdots ③ \end{cases}$$

初期値 $x^{(0)} = 0$

$y^{(0)} = 0$

$z^{(0)} = 0$

①より

$$x = \frac{10 - y - 2z}{7}$$

②より

$$y = \frac{8 - x - 3z}{8}$$

③より

$$z = \frac{6 - 2x - 3y}{9}$$

$k = 1$

$$x^{(1)} = \frac{10 - 0 - 0}{7}$$

$$\fallingdotseq 1.42857$$

$$y^{(1)} = \frac{8 - 0 - 0}{8}$$

$$= 1$$

$$z^{(1)} = \frac{6 - 0 - 0}{9}$$

$$\fallingdotseq 0.66667$$

$$\begin{cases} x^{(1)} = 1.42857 \\ y^{(1)} = 1 \\ z^{(1)} = 0.66667 \end{cases}$$

$k = 2$

$$x^{(2)} = \frac{10 - 1 - 2 \cdot 0.66667}{7}$$

$$\fallingdotseq 1.09524$$

$$y^{(2)} = \frac{8 - 1.42857 - 3 \cdot 0.66667}{8}$$

$$\fallingdotseq 0.57143$$

$$z^{(2)} = \frac{6 - 2 \cdot 1.42857 - 3 \cdot 1}{9}$$

$$\fallingdotseq 0.01587$$

$$\begin{cases} x^{(2)} = 1.09524 \\ y^{(2)} = 0.57143 \\ z^{(2)} = 0.01587 \end{cases}$$

$k = 3$

$$x^{(3)} = \frac{10 - 0.57143 - 2 \cdot 0.01587}{7}$$

$$\fallingdotseq 1.34240$$

$$y^{(3)} = \frac{8 - 1.09524 - 3 \cdot 0.57143}{8}$$

$$\fallingdotseq 0.64881$$

$$z^{(3)} = \frac{6 - 2 \cdot 1.09524 - 3 \cdot 0.57143}{9}$$

$$\fallingdotseq 0.23280$$

$$\begin{cases} x^{(3)} = 1.34240 \\ y^{(3)} = 0.64881 \\ z^{(3)} = 0.23280 \end{cases}$$