$$\boxed{C \approx \frac{\| x_k - x_{k-1} \|_\infty}{\| x_{k-1} - x_{k-2} \|_\infty}}$$

$$C \approx \frac{\| x_2 - x_1 \|_\infty}{\| x_1 - x_0 \|_\infty} = \frac{-\frac{17}{8} + \frac{11}{4}}{-\frac{11}{4} - \emptyset}$$

$$A = \begin{bmatrix} 4 & -1 & \emptyset \\ -1 & 4 & -1 \\ \emptyset & -1 & 4 \end{bmatrix} ; \quad b = \begin{bmatrix} 2 \\ 4 \\ 10 \end{bmatrix}$$

$$x_1^{(k+1)} = \frac{1}{a_{11}} \left[b_1 - a_{12} x_2^{(k)} - a_{13} x_3^{(k)} \right]$$

$$x_2^{(k+1)} = \frac{1}{a_{22}} \left[b_2 - a_{21} x_1^{(k)} - a_{23} x_3^{(k)} \right]$$

$$x_3^{(k+1)} = \frac{1}{a_{33}} \left[b_3 - a_{31} x_1^{(k)} - a_{32} x_2^{(k)} \right]$$

$$\boxed{X^{(\emptyset)} = \begin{bmatrix} \emptyset \\ \emptyset \\ \emptyset \end{bmatrix}} ; \quad X^{(1)} = \frac{1}{4} \begin{bmatrix} 2 - \emptyset \\ 4 - \emptyset \\ 10 - \emptyset \end{bmatrix} = \boxed{\begin{bmatrix} 0.5 \\ 1.0 \\ 2.5 \end{bmatrix} = X^{(1)}}$$

$$X^{(2)} = \frac{1}{4} \begin{bmatrix} 2 - (-1 \cdot 1.0 + \emptyset \cdot 2.5) \\ 4 - (-1 \cdot 0.5 + -1 \cdot 2.5) \\ 10 - (\emptyset \cdot 0.5 + -1 \cdot 1.0) \end{bmatrix}$$

$$= \frac{1}{4} \begin{bmatrix} 2 - (-1.0 + \emptyset) \\ 4 - (-0.5 - 2.5) \\ 10 - (\emptyset - 1.0) \end{bmatrix}$$

$$= \frac{1}{4} \begin{bmatrix} 2 + 1.0 \\ 4 + 3.0 \\ 10 + 1.0 \end{bmatrix}$$

$$= \frac{1}{4} \begin{bmatrix} 3.0 \\ 7.0 \\ 11.0 \end{bmatrix} = \boxed{\begin{bmatrix} 0.75 \\ 1.75 \\ 2.75 \end{bmatrix} = X^{(2)}}$$

CHECK $x^{(0)}, x^{(1)}, x^{(2)}$ ARE CORRECT IN CODE

$\longrightarrow$ THEY ARE

NOW CHECK C's ARE CORRECT

GAUSS - SEIDEL

$(L + D)\, x_{k+1} = -U x_k + b$