3) $x_1^{(0)} = 0$; $x_2^{(0)} = 0$

1° interação:

$x_1^{(1)} = \frac{1}{2}(2 - x_2^{(0)}) \rightarrow \frac{1}{2}(2-0) \rightarrow x_1^{(1)} = 1$

$x_2^{(1)} = -\frac{1}{2}(-2 - x_1^{(0)}) \rightarrow -\frac{1}{2}(-2-0) \rightarrow x_2^{(1)} = 1$

$$\frac{\|x^{(1)} - x^{(0)}\|_\infty}{\|x^{(1)}\|_\infty} = \frac{\|1-0\|}{\|1\|} = 1, \varepsilon = 1 > 0,1$$

2 interação:

$x_1^{(2)} = \frac{1}{2}(2 - x_2^{(1)}) \rightarrow \frac{1}{2}(2-1) \rightarrow x_1^{(2)} = \frac{1}{2}$

$x_2^{(2)} = -\frac{1}{2}(-2 - x_1^{(1)}) \rightarrow -\frac{1}{2}(-2-1) \rightarrow x_2^{(2)} = \frac{3}{2}$

$\|x_1^{(2)} - x_1^{(1)}\| = |\frac{1}{2} - 1| = \frac{1}{2}$ $|x_2^{(2)} - x_2^{(1)}| = |\frac{3}{2} - 1| = \frac{1}{2}$

$$\frac{|x^{(2)} - x^{(1)}|_\infty}{|x^{(2)}|_\infty} = \frac{\frac{1}{2}}{\frac{3}{2}} = \frac{1}{3}, \varepsilon = \frac{1}{3} > 0,1$$

3° interação:

$x_1^{(3)} = \frac{1}{2}(2 - x_1^{(2)}) \rightarrow \frac{1}{2}(2 - \frac{1}{2}) \rightarrow x_1^{(3)} = \frac{1}{4}$

$x_2^{(3)} = -\frac{1}{2}(-2 + x_2^{(2)}) \rightarrow -\frac{1}{2}(-2 - \frac{3}{2}) \rightarrow x_2^{(3)} = \frac{5}{4}$

$\left\{ \begin{array}{l} \dfrac{|x^{(3)} - x^{(2)}|_\infty}{|x^{(3)}|_\infty} = \dfrac{1}{5} \\[4mm] \varepsilon = \dfrac{1}{5} > 0,1 \end{array} \right.$

4ª interação

$$x_1^{(4)} = \frac{1}{2}(2 - x_1^{(3)}) \to \frac{1}{2}(2 - \frac{1}{4}) \Rightarrow x_1^{(4)} = \frac{3}{8}$$

$$x_2^{(4)} = -\frac{1}{2}(-2 - x_2^{(3)}) \to -\frac{1}{2}(-2 - \frac{5}{4}) = \frac{9}{8}$$

$$\begin{cases} \dfrac{|x^{(4)} - x^{(3)}|_\infty}{|x^{(4)}|_\infty} = \dfrac{1}{9} \\[2mm] \varepsilon = \dfrac{1}{9} > 0,1 \end{cases}$$

5° interação

$$x_1^{(5)} = \frac{1}{2}(2 - \frac{3}{8}) = \quad x_2^{(5)} = \frac{7}{16}$$

$$x_2^{(5)} = -\frac{1}{2}(2 - \frac{9}{8}) = \frac{79}{16}$$

$$\begin{cases} \dfrac{|x^{(5)} - x^{(4)}|_\infty}{|x^{(5)}|_\infty} = \dfrac{1}{19}, \quad \varepsilon = \dfrac{1}{19} < 0,1 \end{cases}$$

$$\boxed{x_1 = \frac{2}{5} \qquad x_2 = \frac{6}{5} \qquad \varepsilon = \frac{1}{19} \qquad K = 5}$$

$$x_1 = \frac{2}{5} \qquad x_2 = \frac{6}{5} \qquad \varepsilon = \frac{1}{19} \qquad K = 5$$

2) $(6, 12)$ e $(10, 2)$

$x_0 = 6$ e $y_0 = 12$

$x_1 = 10$ e $y_1 = 2$

$$\boxed{P(x) = \frac{-10x + 108}{4}}$$

$$L_0(x) = \frac{(x - 10)}{-4} \qquad L_1(x) = \frac{x - 6}{4}$$

$$P(x) = \frac{x - 10}{-4} \cdot 12 + \frac{x - 6}{4} \cdot 2 \to \frac{-12 + 120 + 2x - 12}{4} = \frac{-10x + 108}{4}$$

Prova

$$P(6) = \frac{-10 \cdot 6 + 108}{4} = \frac{-60 + 108}{4} = \frac{48}{4} = 12 \qquad P(10) \frac{-100 + 108}{4} = \frac{8}{4} = 2$$