$\Rightarrow$ $F'(2) \leq F'(x) \leq F'(1) \Rightarrow |F'(x)| \leq F'(1) = 0.5303 = k < 1$

$F'(2) = -0.4161$, $F'(1) = 0.5303$, $= \max\{|F'(1)|, |F'(2)|\}$

$\Rightarrow$ L'algorithme converge.

③ On a : $k^n \leq \frac{\varepsilon}{b-a} \Rightarrow n \geq \ln\left(\frac{\varepsilon}{b-a}\right) / \ln k$

$\Rightarrow n \geq \ln 10^{-2} / \ln 0.5403 \simeq 7.47 \Rightarrow n = 8$

d'où :

$x_0 = 2$

$x_1 = 1.909297$ $\quad |x_1 - x| \simeq 0.09$

$x_2 = 1.943253$ $\quad |x_2 - x_1| \simeq 1,01$

$x_3 = 1.931435$ $\quad |x_3 - x_2| \simeq 0.01$

$x_4 = 1.935671$ $\quad |x_4 - x_3| \simeq 0.004$

$x_5 = 1.934025$

$x_6 = 1.934754$

$x_7 = 1.934495$

$x_8 = 1.934587$