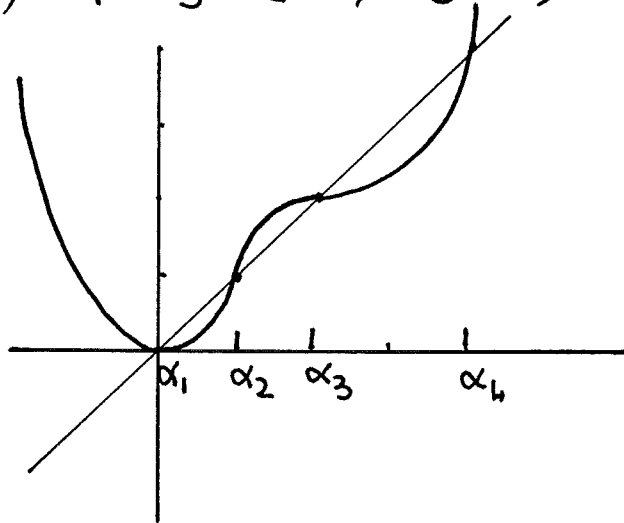


1) $\alpha_1=0, \alpha_2=1, \alpha_3=2, \alpha_4=4$



$$\begin{aligned} 0 < x_0 < 1 & \quad x_k \searrow 0 \\ 1 < x_0 < 2 & \quad x_k \nearrow 2 \\ 2 < x_0 < 4 & \quad x_k \searrow 2 \\ x_0 > 4 & \quad x_k \nearrow +\infty \end{aligned}$$

$$\begin{aligned} g'(x) &= \frac{1}{2}x^3 - \frac{21}{8}x^2 + \frac{7}{2}x \\ g''(x) &= \frac{3}{2}x^2 - \frac{21}{4}x + \frac{7}{2} \end{aligned}$$

$g'(0)=0 \quad g''(0)=\frac{7}{2}$ 2° ordine

$g'(2)=\frac{1}{2}$ 1° ordine

2) $B_J = \begin{bmatrix} 0 & 0 & 0 & -\beta/\alpha \\ 0 & 0 & 0 & -\beta/\alpha \\ 0 & 0 & 0 & -\beta/\alpha \\ -\beta/\alpha & -\beta/\alpha & -\beta/\alpha & 0 \end{bmatrix}$

$$\begin{aligned} \rho(B_J) &= \sqrt{3} \quad |\beta/\alpha| < 1 \quad |\beta/\alpha| < \frac{1}{\sqrt{3}} \quad |\beta| < \frac{|\alpha|}{\sqrt{3}} \\ \|B_J\|_1 &= 3 \quad \left| \frac{\beta}{\alpha} \right| < 1 \quad |\beta| < \frac{1}{3} |\alpha| \\ \|B_J\|_\infty & \end{aligned}$$

3) $K_f(x) = \left| \frac{x}{2\sqrt{x+1}\sqrt{x-1}} \right| < 5 \quad 99x^2 > 100 \quad x > \frac{10\sqrt{11}}{33} \approx 1.00503$
(C.E. $x > 1$)

4) $f'(x) = -2xe^{-x^2} \quad H = \frac{b-a}{m} = \frac{1}{m} \quad \text{Stima} = \frac{H^2}{12} [f'(a) - f'(b)]$

$$\left| \frac{1}{12} \cdot \frac{1}{m^2} \cdot 2 \cdot \frac{1}{e} \right| < 10^{-4} \quad m^2 > \frac{1}{6e \cdot 10^4} \quad m > \frac{1}{100 \sqrt{6e}} = 24.76 \quad \bar{m} = 25$$

$0 \quad \frac{1}{4} \quad \frac{1}{2} \quad \frac{3}{4} \quad 1 \quad H = \frac{1}{4}$

$I_4^T = \frac{1}{4} \cdot \frac{1}{2} [f(0) + 2f(\frac{1}{4}) + 2f(\frac{1}{2}) + 2f(\frac{3}{4}) + f(1)] = \dots = 0.7430$

Stima $\frac{1}{12} \cdot \frac{1}{16} \cdot \frac{2}{e} \approx 0.003832$