

$$x^{\frac{1}{3}}$$

$$f(x) = x^{\frac{1}{3}}$$

(I)

$$f'(x) = \frac{1}{3} x^{-\frac{2}{3}}$$

$$x_{n+1} = \frac{x_n - x_n^{\frac{1}{3}}}{\frac{1}{3} x_n^{-\frac{2}{3}}}$$

$$4e^{-0,5x} - x$$

$$x_0 = 2$$

4 iterationen

①

$$x = 4e^{-0,5x}$$

$$1) f(x) = 2 \approx 1,47$$

$$2) f(x=1,47) \approx 1,92$$

$$3) f(x=1,92) \approx 1,53$$

$$4) \underline{\underline{f(x=1,53) \approx 1,86}}$$

$$x$$

$$2$$

$$1,47$$

$$1,92$$

$$1,53$$

$$f(x)$$

$$1,47 = 0,53$$

$$1,92 = 0,45$$

$$1,53 = 0,39$$

$$1,86 = 0,33$$

$$x^3 + 4x^2 - 10 = 0$$

$$[1, 2]$$

4 Iterationen

(11)

$$1) \quad x=1 \quad \frac{1+4-10}{-}$$

x

$$x=2 \quad \frac{8+16-10}{+}$$

= -

$$x = \frac{1+2}{2}$$

$$2) \quad x=1 \quad \frac{1+4-10}{-}$$

x

$$x=\frac{3}{2} \quad \frac{\left(\frac{3}{2}\right)^3 + 4\left(\frac{3}{2}\right)^2 - 10}{+} = - \quad x = \frac{1+\frac{3}{2}}{2}$$

$$3) \quad x=\frac{5}{4} \quad \frac{\left(\frac{5}{4}\right)^3 + 4\left(\frac{5}{4}\right)^2 - 10}{-}$$

x

$$x=\frac{7}{8}$$

$$+$$

= -

$$x = \frac{\frac{5}{4} + \frac{7}{8}}{2}$$

$$4) \quad x=\frac{5}{4}$$

$$-$$

-

x

$$x=\frac{11}{8}$$

$$\left(\frac{11}{8}\right)^3 + 4\left(\frac{11}{8}\right)^2 - 10$$

-

= -

$$x = \frac{5}{4}$$

Gitter $\left[\frac{5}{4}, \frac{11}{8}\right]$ vermindert

$$f(x) = x^5 - 2x^2 - 5$$

[354]

Leibniz's

(I)

$$1) \frac{x^2}{8-8-5}$$

x

$$\frac{x^4}{64-32-5}$$

$$x = \left(\frac{2+4}{2} \right)$$

$$2) \frac{x^2}{8-8-5}$$

x

$$\frac{x^3}{27-18-5}$$

$$x = \left(\frac{2+7}{2} \right)$$

$$3) \frac{x^5}{125-50-5}$$

x

$$\frac{x^3}{27}$$

$$x = \left(\frac{2+3}{2} \right)$$

$$4) \frac{x^5}{125-50-5}$$

x

$$\frac{x^4}{\left(\frac{11}{4} \right)^3 - 2 \left(\frac{11}{4} \right)^2 - 5}$$

= -

Let $\left(\frac{5}{2}, \frac{11}{4} \right)$ ans