

NMA – homework from week 4

The Newton method.

Consider the nonlinear system

$$\frac{x^2}{4} + y^2 = 1, \quad y = 2 \cos(\pi x).$$

- a) Find graphically approximate position of all roots (solutions of the system).
- b) Choose $x^{(0)} = [-0.5, -1]^T$ and compute $x^{(1)}$ using the Newton method.
- c) Compute the column norm of the difference of the vectors $x^{(0)}$ and $x^{(1)}$.