

NMA – homework from week 6

Higher order equation

Consider Cauchy problem

$$y''' + \frac{1}{3-x}y' = \sqrt{x+3}, \quad y(-2) = 1, \quad y'(-2) = 5, \quad y''(-2) = 2.$$

- (a) Find the interval of maximal solution.
- (b) Choose step-size $h = 0.1$ and using explicit Euler method compute approximate value of $y(-1.8)$ and $y'(-1.8)$.
- (c) Choose step-size $h = 0.2$ and using the midpoint method compute approximate value of $y(-1.8)$ and $y'(-1.8)$.
- (d) Can the midpoint method be used for the computation of approximate value of $y(3.2)$? Justify the answer.