1.4 Euler's Method

Introduction to Numerical solution:

Continued

Euler's Method

Definition:

A simple procedure that can be summarized by the recursive formulas

$$x_{n+1} = x_n + h,\ where\ h\ is\ step\ size$$
$$y_{n+1} = y_n + hf(x_n, y_n), n = 0,1,2, \ldots$$

to approximate an initial value problem

Example.

Use Euler's Method with step size $h = 1$ to approximate the solution to the initial value problem.

$$\frac{dy}{dx} = x^2 - y^2, \ and \ y(0) = 1.$$

Find $y(5)$,

Solution.

Solution..