NUMERICAL METHODS – HW6

You can write your answers in English or Turkish, however, it is encouraged to use the English. Please use the given word template (in the uzem website), send it as pdf.

Q1 (30).

Apply *Forward finite-divided-difference* on given function and given values.

$f(x) = 13 - 2x + x^2$

Find the derivative at starting from x=0 to x = 1.5 by using finite divided differences and a step size of h = 0.5

Q2. (30)

Solve initial-value problem (related to an ODE) by using Euler method $\frac{dy}{dx} = 2x - yx^2$,

with h=0.5 , x(0)=0 and y(0)=1. Find the value of y at x=1.5.

Q3. (40)

Solve initial-value problem (related to an ODE) by using Heun method $\frac{dy}{dx} = 2x - yx^2$,

with h=0.5 , x(0)=0 and y(0)=1. Find the value of y at x=1.5.