Scilab Practical 1 : Modified Euler's Method

Using suitable loop, write a sci-lab program to obtain approximate solution of y using Modified Euler's Method (Correct up to five decimal places).

1) $\frac{dy}{dx} = \frac{y-x}{y+x}$; *y(0) = 1 for x = 0.2 with h = 0.1* *(Roll. No: 1-10)*

2) $\frac{dy}{dx} = y^2 - \frac{y}{x}$; $y(1) = 1\ for\ x = 1.1\ with\ h = 0.05$ $(Roll.No: 11-20)$

3) $\frac{dy}{dx} = 2 + \sqrt{xy};\ y(1) = 1\ for\ x = 2\ with\ h = 0.5$ $(Roll.No: 21-30)$

4) $\frac{dy}{dx} = log(x + y)\,; y(0) = 2\ for\ x = 0.4\ with\ h = 0.2$ *(Roll. No: 31-40)*

5) $\frac{dy}{dx} = y + x^2$; *y(0) = 1 for x = 0.1 with h = 0.05* *(Roll. No: 41-50)*

6) $\frac{dy}{dx} = -xy^2; y(0) = 2\ for\ x = 0.2\ with\ h = 0.1$ *(Roll. No: 51-60)*

7) $\frac{dy}{dx} = x + y^2; y(0) = 1\ for\ x = 0.2\ with\ h = 0.1$ *(Roll. No: 61 onwards)*

Scilab Practical 2 : Runge kutta method of order four

Using suitable loop, write a sci-lab program to obtain approximate solution of y using Runge Kutta method of order four (Correct up to five decimal places).

1) $\frac{dy}{dx} = log(x + y); y(0) = 2 \ for \ x = 0.4 \ with \ h = 0.2$ *(Roll. No: 1-10)*

2) $\frac{dy}{dx} = x + y^2; y(0) = 1 \ for \ x = 0.2 \ with \ h = 0.1$ $(Roll.No: 11 - 20)$

3) $\frac{dy}{dx} = -xy^2; y(0) = 2 \ for \ x = 0.2 \ with \ h = 0.1$ $(Roll.No: 21 - 30)$

4) $\frac{dy}{dx} = \frac{y-x}{y+x}$; *y(0) = 1 for x = 0.2 with h = 0.1* *(Roll. No: 31-40)*

5) $\frac{dy}{dx} = y + x^2$; *y(0) = 1 for x = 0.1 with h = 0.05* *(Roll. No: 41-50)*

6) $\frac{dy}{dx} = 2 + \sqrt{xy}$; $y(1) = 1$ *for x = 2 with h = 0.5* *(Roll. No: 51-60)*

7) $\frac{dy}{dx} = y^2 - \frac{y}{x}$; *y(1) = 1 for x = 1.1 with h = 0.05 (Roll. No: 61 onwards)*

Specimen Outcome Printout

Name: _____ A.Y._____ Roll No. :_____ Division:_____

SCI-LAB PRACTICAL 1: MODIFIED EULER'S METHOD

QUESTION:

INPUT

OUTPUT

Enter initial value of x0:
Enter the value of y0:
Enter value of h:
Enter Final value of xn:
Enter number of iteration:
step=

at x=

Euler solution y=

modified solution =

modified solution =

modified solution =

modified solution =

modified solution =

---

step=

at x=

Euler solution y=

modified solution=

modified solution =

modified solution=

modified solution=

modified solution=

Specimen Outcome Printout

Name: _____ A.Y._____ Roll No. :_____ Division:_____

SCI-LAB PRACTICAL 2: RUNGE KUTTA METHOD OF FOURTH ORDER
QUESTION:

INPUT

OUTPUT

By Range Kutta fourth order Method

Enter initial value of x0:

Enter the value of y0:

Enter value of h:

Enter Final value of xn:

Number of iteration :

Step=

k1=

k2=

k3=

k4=

k=

at x=

y=

Step=

k1=

k2=

k3=

k4=

k=

at x=

y=