**Experiment Name :** Polygon’s Method for ordinary differential equations.

**Experiment Objectives :** Polygon’s Iterative Rule is a numerical method which we used for solving ordinary differential equations.

**Theory :** The Polygon’s iterative method is a modified numerical method to generate a numerical solution to an initial value problem of the form,

Where

So the Polygon’s iterative method can be written as,

**Program Code :**

% polygon's method

h = input('Enter the step size: ');

x = 1:h:2;

y = zeros(size(x));

y(1) = 2;

n = numel(y);

h1 = h/2;

for i = 1:n-1

m1 = (2\*y(i))/x(i);

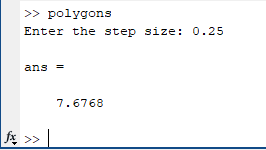
m2 = ((2\*(y(i)+m1\*h1)))/(x(i)+h1);

y(i+1) = y(i)+(((m1+(2\*m2))/3)\*h);

end

y(i+1)

**Output :**



**Discussion :** In this experiment, we have experimented the Polygon’s iterative method which is a numerical method for solving ordinary differential equation. The results of the experiment were accurate and there were no errors while doing the experimental calculations. We also came to the conclusions that, the values we got by using Polygon’s method are more efficient than the normal method and less efficient than Euler’s and Heun’s method for solving ordinary differential equations.