

# Advanced Numerical Techniques

## Assignment

### 13MA20004

#### Lab - 4

**Q.1 Solve**

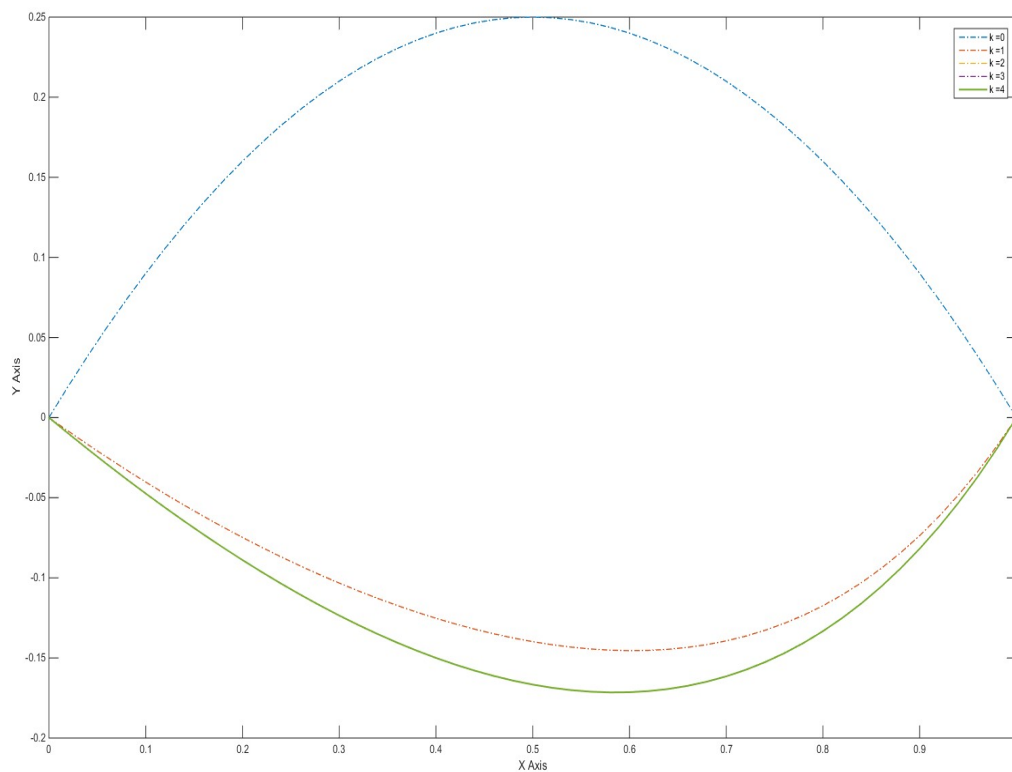
$$y'' = .5 * (1 + x + y)^3$$

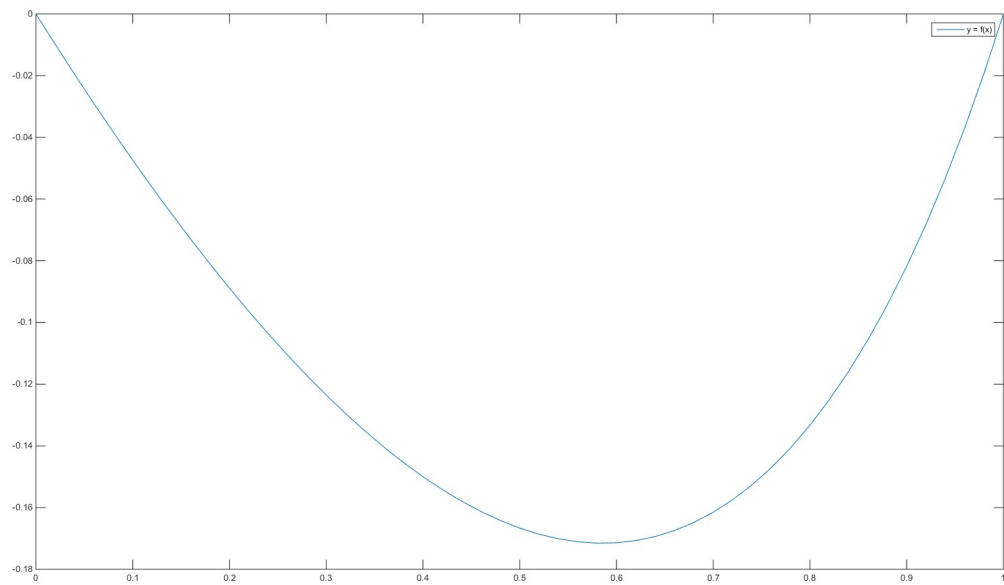
$$y(0) = 0, y(1) = 0, h = 0.02$$

$$e = 10^{-5}$$

**Solution**

:-





Plots of Question 1

**Q.2 Solve**

$$y'''' + yy'' + 1 - (y')^2 = 0$$

$$y(0)=0, y'(0)=0$$

$$y'(10)=1$$

$$h=0.1;$$

$$e = 10^{-5}$$

**Solution :-**

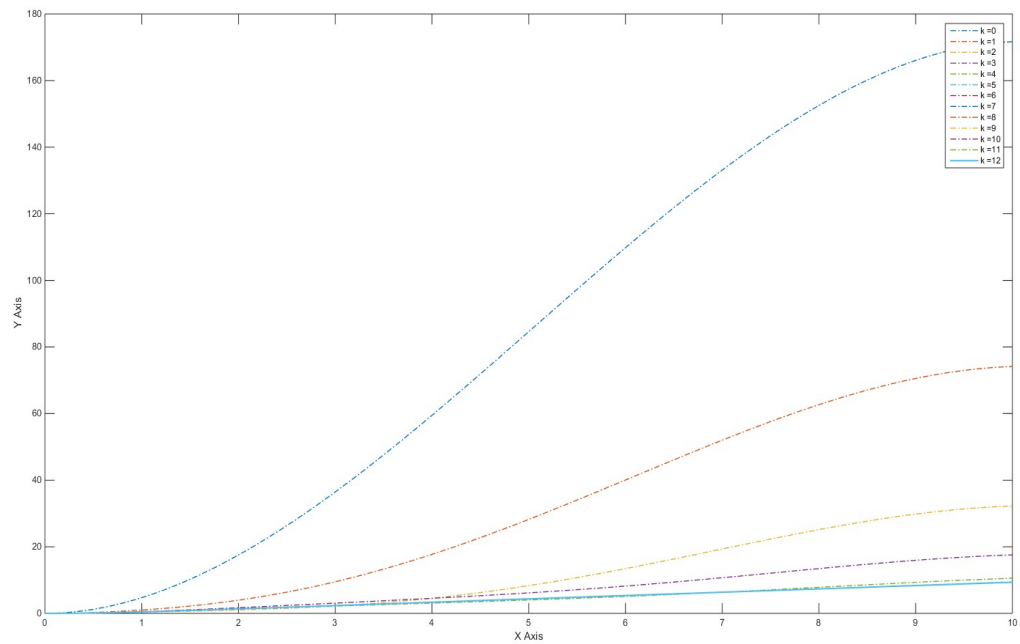


Fig1: Plot of  $y$  at every iteration

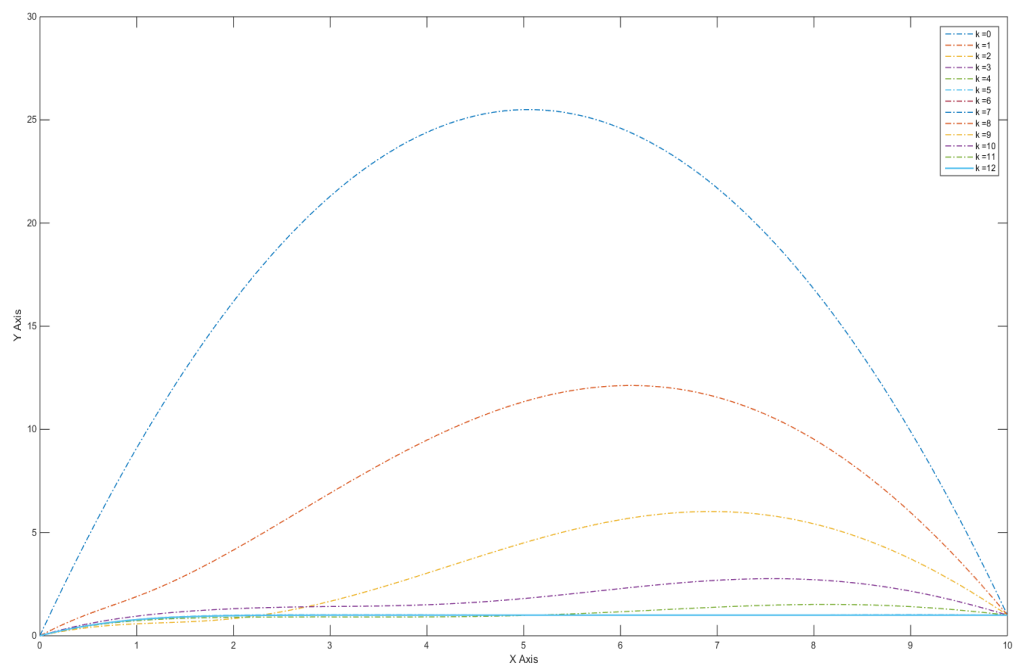


Fig2: Plot of  $y'$  at every iteration

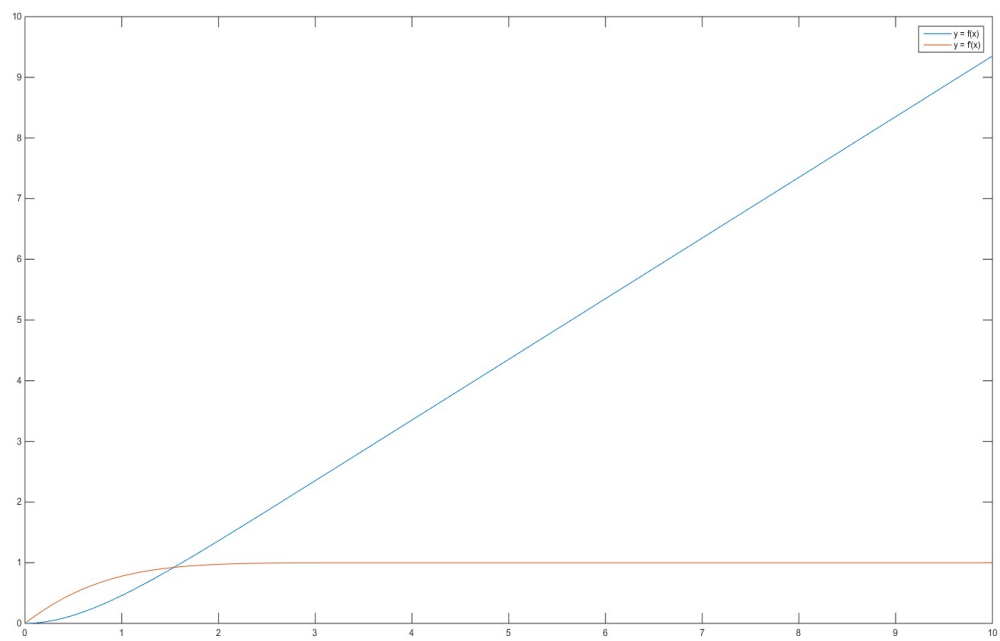


Fig3: Plot at final iteration