



**Question 3 :**

Show whether the followings converge or diverge

(a)  $\int_1^2 \frac{1}{x\sqrt{\ln x}} dx$

(b)  $\left\{ \left( 1 - \frac{5}{n} \right)^n \right\}$

(c)  $\sum_{n=1}^{\infty} \frac{\sqrt[3]{n+1}}{n^2+1}$

**Question 4 :**

Find the interval of convergence of  $\sum_{n=1}^{\infty} (-1)^{n-1} \frac{2^n}{n^2} (2x-1)^n$

**Question 5 :**

Use the first three terms of the Maclurian series to approximate

$$\int_0^1 \frac{1-e^{-x^2}}{x} dx$$

**Question 6 :**

(a) Find the area of the region

outside  $r=1-\cos\theta$  and inside  $r=3\cos\theta$ .

(b) Set up the integrals (Do not evaluate), that can be used to find the area of the region

Inside both  $r=1-\cos\theta$  and  $r=3\cos\theta$ .