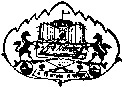
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**SAVITRIBAI PHULE PUNE UNIVERSITY**

**INTERDISCIPLINARY SCHOOL OF SCIENTIFIC COMPUTING**

**Mid Sem. Exam-III Dec. 2019**

**Course No. : SC – 104**

**Title: Foundation of Scientific Computing - II**

**Date :04/12/2019**

**Time : 1.5 hrs. Marks : 30**

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Q.1 (a) Find the area of the region bounded by given curves and lines. (3)

(i) The curve and the line 

**OR**

(ii) The curves  and 

(b) Using integration find the perimeter of the circle of radius  (2)

(c) Find the surface area of the solid formed by rotating the ellipse  (5)

(i) around  (ii) around 

(Hint : Use the equation of ellipse in the form ,   )

**OR**

Find the volume of the solid generated by rotating the region bounded by the curve (5)

 and the 

1. around  (ii) around 

Q.2 (a) Examine the convergence of the following series. (Any two, 2 marks each.)

∞

∑

n = 2

∞

∑

n = 0

∞

∑

n = 0

∞

∑

n = 1



(i) (ii)  (iii) 

∞

∑

n = 1

(iv) 

**P.T.O**

(b) Find the region of convergence of the power series. (2)

∞

∑

n = 1

∞

∑

n = 0

(i)   **OR** (ii) 

(c) Obtain the following expression using term by term integration of convergent power series.

 (4)

Using the above, find the sum of the series

∞

∑

n = 1



**OR**

Find the Fourier series of the function (4)

Using the series, show that



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