**STRATHMORE:PROBLEM SET 3**

**QUESTION ONE (30 MARKS)**

1. Evaluate the following integrals:
2.  (4 marks)
3.  (4 marks)
4. Evaluate the following definite integrals:
5.  (3 marks)
6.  (3 marks)
7. Calculate the volume generated when the area branded by the curves  and  is rotated about the *x*-axis. (5 marks)
8. Find the equation of the curve that passes through the point  and whose gradient function is given by  (4 marks)
9. Evaluate the following double integral.

 (4 marks)

1. Evaluate  and  where  (3 marks)

**QUESTION TWO (20 MARKS)**

1. Decompose the expression into partial fraction’s and hence evaluate:  (6 marks)
2. Evaluate the following improper integrals.
3.  (3 marks)
4.  (3 marks)
5. Find the value of:

 where  (4 marks)

1. Find the average value of the function  over the interval 

(4 marks)

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**QUESTION THREE (20 MARKS)**

Evaluate the following integrals:

1.  (5 marks)
2.  (5 marks)
3.  (5 marks)
4.  (5 marks)

**QUESTION FOUR (20 MARKS)**

1. i. Find the Maclaurin’s series for 

ii. Using the first four terms of the Maclaurins series for , evaluate the value of lf (7 marks)

1. Calculate the volume of the solid generated when the areas brunded by ,  and  is rotated abut the x-axis. (4 marks)
2. Find the length of the arc of the curve  from the origin of . (5 marks)
3. Evaluate the area between the curve  and the x-axis from  to .

(4 marks)

**QUESTION FIVE (20 MARKS)**

1. Find the area brunded by the curve  and *x*-axis from *x* = 0 to *x* = 6 using Trapezoidel rule with *n* = 10. (7 marks)
2. Estimate the value  using Simpson’s rule with *n* = 8 (7 marks)
3. Evaluate the following integrals:
4.  (3 marks)
5.  (3 marks)
6.  (3 marks)

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