BSM 6-Line and Multiple integrals and Laplace Transforms

Programme	**B.Sc**
Subject	Mathematics
Semester	V
University	Kuvempu University
Session	7

Double integration

Evaluation of double integrals under given limits

Recap of previous class

- Definition of line integral and basic properties
- Definition of double integrals and basic properties

Objectives:

1. Evaluation of double integrals under given limits
2. Examples on double integrals under given limits

Session outcomes

- To able to understand the double integration
- To able to understand properties of double integration
- To able to understand problems

Prerequisites

- Standard formulae of integration

Problems:

1) $\int_0^a \int_0^b (x^2 + y^2) dx dy$

2) $\int_0^1 \int_0^2 (x + y) dy dx$

3) $\int_0^3 \int_1^2 (x^2 + 3y^2) dy dx$

4) $\int_0^1 \int_0^1 (x^2 + xy) dy dx$

Session Summary:

- To solve double integration, which is useful in finding certain areas.
- The knowledge is a must before tackling double integrals

MCQ :

1) $\int_0^{\frac{\pi}{2}} \int_{\frac{\pi}{2}}^{\pi} cos(x+y)dxdy \; is \; equal \; to$

A. 2
B. 1
C. -1
D. -2

Ans : A

MCQ :

$2.\int_1^2 \int_0^{3y} ydydx \ \ is\ equal\ to$

A. 3
B. 5
C. 7
D. 9

Ans : C

MCQ

3) $\int_0^1 \int_0^{\sqrt{1-y^2}} ydydx \ \ is\ equal\ to$

A. 3

$B.\frac{1}{3}$

C. 2

$D.\frac{1}{2}$

Ans : B

MCQ :

4. Solution of $\int_1^2 \int_0^x \frac{dxdy}{x^2+y^2}$

$A.\ \frac{1}{4}log2$

$B.\ \frac{1}{2}log4$

$C.\ \frac{\pi}{2}log4$

$D.\frac{\pi}{4}log2$

Ans : D

References:

- Manjunath, B. V. and Nandeeshkumar(2018). A textbook of B.Sc Mathematics. College book house, Bangalore.

- Ranganath G. K (2012). A textbook of B.Sc Mathematics (Sixth). S. Chand, New Delhi.