



## Tutorial No. 11

### Double Integral

Evaluate the following iterated integral

1-

$$I = \int_2^3 \int_1^5 (x + 2y) \, dx \, dy.$$

2-

$$I = \int_0^1 \int_{x^2}^{x^3} (x^2 + y^2) \, dy \, dx.$$

3- For the following integrals sketch the region of integral and evaluate it

1.  $\int_0^3 \int_0^2 (4 - y^2) \, dy \, dx$

2.  $\int_0^3 \int_{-2}^0 (x^2 y - 2xy) \, dy \, dx$

3.  $\int_{-1}^0 \int_{-1}^1 (x + y + 1) \, dx \, dy$

4.  $\int_{\pi}^{2\pi} \int_0^{\pi} (\sin x + \cos y) \, dx \, dy$

5.  $\int_0^{\pi} \int_0^x x \sin y \, dy \, dx$

6.  $\int_0^{\pi} \int_0^{\sin x} y \, dy \, dx$

7.  $\int_1^{\ln 8} \int_0^{\ln y} e^{x+y} \, dx \, dy$

8.  $\int_1^2 \int_y^{y^2} dx \, dy$

9.  $\int_0^1 \int_0^{y^2} 3y^3 e^{xy} \, dx \, dy$

10.  $\int_1^4 \int_0^{\sqrt{x}} \frac{3}{2} e^{y/\sqrt{x}} \, dy \, dx$