

## SNS COLLEGE OF TECHNOLOGY (AN AUTONOMOUS INSTITUTION) COIMBATORE - 35 DEPARTMENT OF MATHEMATICS



Greens Theorem to a Planes.

bounded by a simple closed waive c and it M and N are continuous functions of x and y having continuous desiratives in R then

 $\int M dx + N dy = \iint \left( \frac{\partial N}{\partial x} - \frac{\partial M}{\partial y} \right) dx dy$ Where c is a convertenced in the anticlockwise

direction.

DEValuate by Greens theorem  $\int (xy+x^2)dx + (x^2+y^2)dy$ Where C is the square formed by x = 1, y = 1, y = 1Let R be the region enclosed by C

By Greens theorem,

By Greens theorem,
$$\int Mdx + Ndy = \iint \left(\frac{\partial N}{\partial x} - \frac{\partial M}{\partial y}\right) dxdy$$
Here  $M = \frac{\partial M}{\partial y} + \frac{\partial M}{\partial y} = \frac{\partial M}{\partial x}$ 

$$N = \frac{\partial M}{\partial x} = \frac{\partial M}{\partial x} = \frac{\partial M}{\partial x}$$

$$\int (xy+x^{2})dx + (x^{2}+y^{2})dy = \iint (2x-x)dxdy$$

$$= \iint xdxdy = \int (\frac{x^{2}}{2})^{-1}dy$$

$$= \int (\frac{1}{2} - \frac{1}{2})^{-1}dy$$

=0.

## SNS COLLEGE OF TECHNOLOGY (AN AUTONOMOUS INSTITUTION) COIMBATORE - 35 DEPARTMENT OF MATHEMATICS

@ Evaluate by Greens theorem [ ex (sing on + cosy dy) where C is the rectangle with vertices (0,0), (T,0), (x, x12), (0, x12)

Let R be the nagion enclosed by C

By Greens theorem.

 $\int_{c} M dn + N dy = \iint_{R} \left( \frac{\partial N}{\partial n} + \frac{\partial M}{\partial y} \right) dn dy.$ Here  $M = e^{\frac{1}{2}} x \sin y$   $\frac{\partial M}{\partial y} = e^{\frac{1}{2}} \cos y$   $\frac{1}{2} x \cos y$   $N = e^{\frac{1}{2}} \cos y$   $\frac{\partial N}{\partial x} = -e^{\frac{1}{2}} \cos y$ 

$$\int_{R} e^{x} (\sin y \, dx + \cos y \, dy) = \iint_{R} (-e^{x} \cos y - e^{x} \cos y) \, dx \, dy$$

$$= \iint_{R} (-2e^{x} \cos y) \, dy$$

$$= -2 \iint_{R} (-e^{x} \cos y) \, dy$$

$$= 2 \iint_{R} (e^{x} - 1) \cos y \, dy$$

$$= 2(e^{x} - 1) \int_{R} (\cos y) \, dy$$

$$= 2(e^{x} - 1) \int_{R} (\cos y) \, dy$$

$$= 2(e^{x} - 1) \int_{R} (\cos y) \, dy$$

## SNS COLLEGE OF TECHNOLOGY (AN AUTONOMOUS INSTITUTION) COIMBATORE - 35 DEPARTMENT OF MATHEMATICS

```
3. Evaluate by Govern Theorem (cn = coshy) don't ly + son's) dry
      where C is the nectargle with exertices (0,0), (7,0), (7,1)
                   (0,1)
                                  het R be the region enclosed by C
       By Guens Streemen,
               \int (Mdn + Ndy) = \iint \left(\frac{\partial N}{\partial x} - \frac{\partial M}{\partial y}\right) dxdy
Here M = x^2 coshy \frac{\partial M}{\partial y} = \frac{\partial M}{\partial y} = \frac{\partial M}{\partial y} + \frac{\partial M}{\partial y} = \frac{\partial M}{\partial

\begin{array}{ll}
\therefore \int (x^2 - \cosh y) dx + (y + \sin x) dy &= \int \int (\cos x - \sinh y) dx dy \\
&= \int \int (\cos x - \sin hy) dx dy \\
&= \int \int (\sin x + 3 \cos hy) \int dy \\
&= \pi \int (\cos hy) dy \pi (\sinh y) dy \\
&= \pi \int (\cosh y) dy = \pi \int (\cosh y - 1)
\end{array}

                         The feet warm in seal server for it is account to
                                                                    entering with a price of the properties. The state of the forest
                                                                                                                                                                                                                                                                                                                                                                      out licelly and part
```