

$$\int_0^1 \int_0^1 \cos(\min\{x^2+y^2, 1\}) \, dx \, dy$$

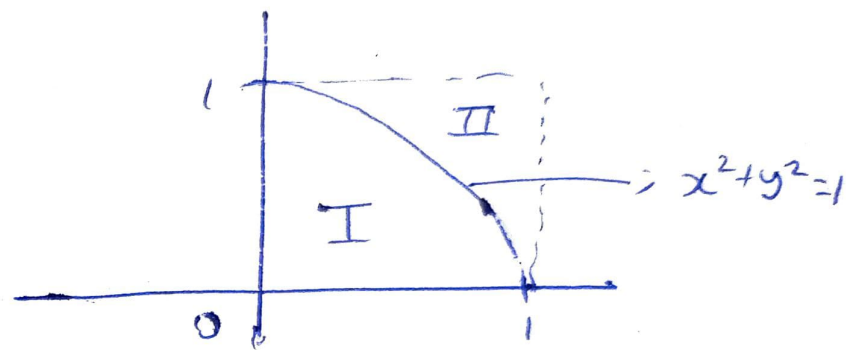
$$\int_I \cos(x^2+y^2) + \int_{II} \cos(1) \, dx \, dy$$

$$\Rightarrow \int_{\theta=0}^{\frac{\pi}{2}} \int_{r=0}^1 \cos(r^2) \cdot r \, dr \, d\theta + \cos(1) \times (\text{area of II})$$

$$\Rightarrow \frac{\pi}{2} \times \frac{1}{2} \cdot (\sin r^2)_0^1 + \cos(1) \times \left[1 - \frac{\pi}{4}\right]$$

$$\Rightarrow \frac{\pi \sin 1}{4} + \frac{\cos(1)(4-\pi)}{4} \Rightarrow$$

$$\boxed{\frac{1}{4} (\pi \sin 1 + 4 \cos 1 - \pi \cos 1)} \quad \text{Ans} \checkmark$$



$$\left[\begin{array}{l} \text{Region I} \rightarrow x^2+y^2 < 1 \\ \text{Region II} \rightarrow x^2+y^2 > 1 \end{array} \right]$$

$$\left[\begin{array}{l} \text{Area of II} = \text{area of square} \\ - \text{area of quadrant} \end{array} \right]$$