

Ex 103

$$\text{Clare (S)} = \int_{(S)} dx dy$$

On polx $x = r \cos \theta$, $y = r \sin \theta$ (0, 2π)

$$\text{Clare (S)} = \iint r dr d\theta \rightarrow 0, 2\pi$$

$$= \int_{\frac{\pi}{2} + \frac{\pi}{6}}^{\frac{\pi}{2} + \frac{\pi}{6}} \left[\int_1^3 r dr \right] d\theta \quad (1)$$

$$= 4 \int_{\frac{\pi}{2} + \frac{\pi}{6}}^{\frac{\pi}{2} + \frac{\pi}{6}} d\theta = \frac{4\pi}{3} \rightarrow 0 \quad (10)$$