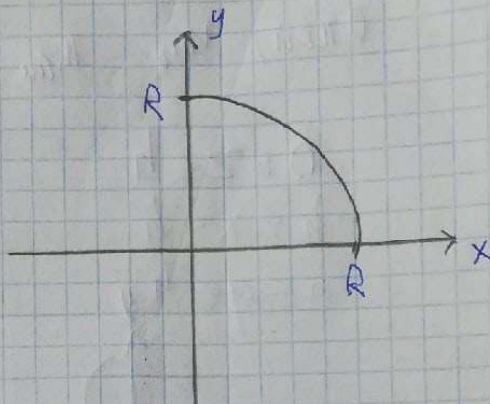


N4

$$\int_L x^2 y \, dl$$

$$x = R \cdot \cos t$$

$$y = R \cdot \sin t$$



$$\int_L x^2 y \, dl = \int_0^{\frac{\pi}{2}} x^2(t) y(t) \cdot \sqrt{x'(t)^2 + y'(t)^2} \, dt =$$

$$= \int_0^{\frac{\pi}{2}} R^2 \cdot \cos^2 t \cdot R \cdot \sin t \cdot \sqrt{(R \cos t)' ^2 + (R \sin t)' ^2} \, dt =$$

$$= R^4 \int_0^{\frac{\pi}{2}} \cos^2 t \cdot \sin t \, dt = R \cdot \int_0^R u^2 \, du = R \cdot \left. \frac{\cos^3 t}{3} \right|_0^{\frac{\pi}{2}} =$$

$$= \frac{1}{3} R^4$$

$$\left| \begin{array}{l} u = \cos t \\ \frac{du}{dt} = -\sin t \\ dy = -\sin t \, dt \end{array} \right|$$