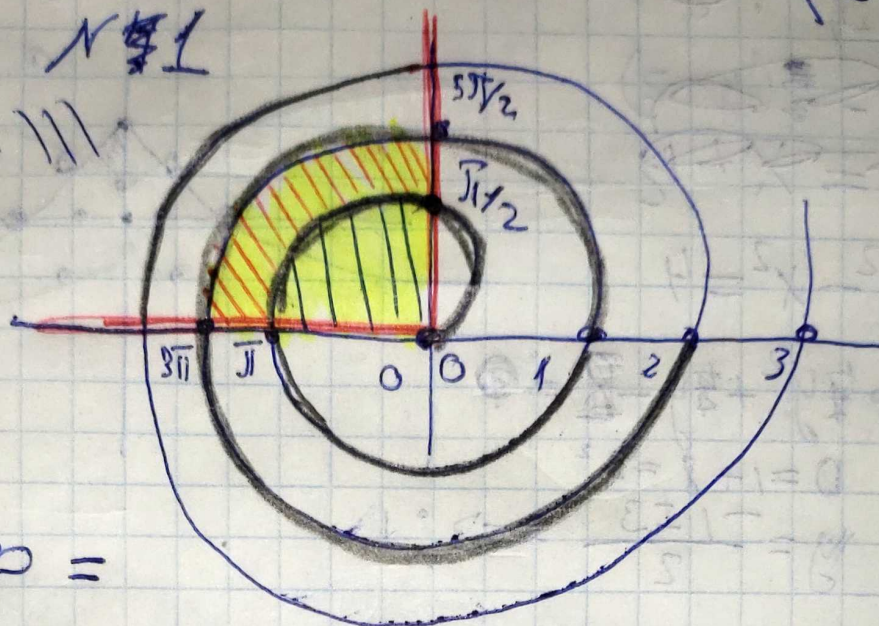


УЧДГ РК1 Тунем №4 (30)(17)

/// = - ///

$$\rho = \varphi$$



$$S_1 = \frac{1}{2} \int_{\frac{5\pi}{2}}^{3\pi} \rho^2 d\varphi =$$

$$= \left. \frac{\rho^3}{3} \right|_{\frac{5\pi}{2}}^{3\pi} = \frac{27\pi^3}{6} - \frac{125\pi^3}{60} = \frac{91\pi^3}{48}$$

$$S_2 = \frac{1}{2} \int_{\pi/2}^{\pi} \rho^2 d\varphi = \left. \frac{\rho^3}{6} \right|_{\pi/2}^{\pi} = \frac{\pi^3}{6} - \frac{\pi^3}{80} = \frac{7\pi^3}{48}$$

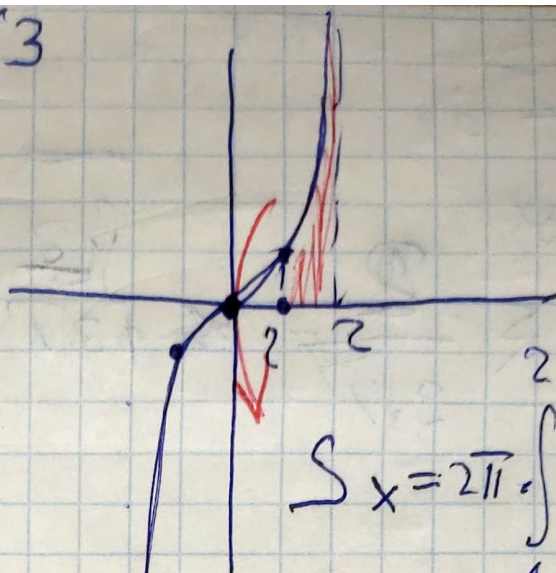
$$S = \frac{91\pi^3}{48} - \frac{7\pi^3}{48} = \boxed{\frac{84\pi^3}{48}}$$

$$y = x^3$$

$$x = 1$$

$$x = 2$$

N3



$$S_{x=2\pi} = \int_1^2 x^3 \cdot \sqrt{1+9x^4} dx$$

=

$$\begin{aligned} u &= \sqrt{1+9x^4} & du &= \frac{36x^3}{\sqrt{1+9x^4}} \\ dv &= x^3 & v &= \frac{1}{4}x^4 \end{aligned}$$

$$\int \frac{t = 1+9x^4}{dx = \frac{dt}{36x^3}} = \frac{2\pi}{36} \int \sqrt{t} dt = \dots$$

Возвращаем
оригинал.

$$= \frac{145\pi\sqrt{145} - 10\pi\sqrt{10}}{27}$$

$$\int_1^{\infty} \frac{\sin x}{x\sqrt{x+1}} dx \quad r4$$

$$\frac{\sin x}{x\sqrt{x+1}} \sim \frac{\sin x}{x^{\frac{3}{2}}}$$

$$\frac{1}{3\sqrt{x}}$$

$$\int_1^{\infty} \frac{1}{3\sqrt{x}}$$

$$q = \frac{1}{2} \quad q < 1$$

сходится

сходится

сходится

$$\int_0^1 \frac{2^x - 1}{\sin x}$$

$$2^x - 1 \sim x$$

$$\frac{1}{\sin x} \sim \frac{1}{x}$$

$$\int_0^1 \frac{1}{x^0}$$

$$q = 0 \quad q < 1$$

сходится

сходится