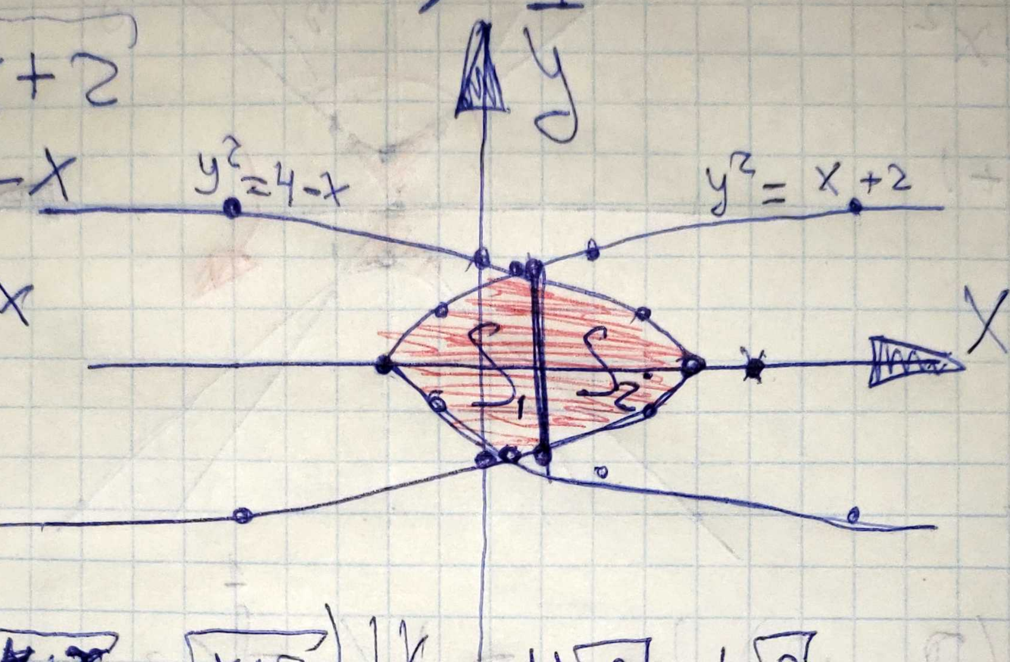
ИиДУ РК1 БИЛЕТ № 6 (19)

№ 1

$y^2=\sqrt{x+2}$

$y^2 = 4-x$



$x+2=4-x$

$2x=2$

$x=1$

$$\frac{S_1}{2}=\int_{-2}^{1}\Big(\underbrace{\sqrt{\cancel{x+2}}}_{t}-\underbrace{\sqrt{x+2}}_{z}\Big)dx = 4\sqrt{6}-4\sqrt{3}$$

$$S_1 = 2\frac{S_1}{2} = 8\sqrt{6}-8\sqrt{3}$$

$$\frac{S_2}{2}=\int_{1}^{4}\left(\sqrt{x+2}-\sqrt{4-x}\right)dx = 4\sqrt{6}-4\sqrt{3}$$

$$S_2 = 2\frac{S_1}{2} = 8\sqrt{6}-8\sqrt{3}$$

$$S = 16\sqrt{6}-16\sqrt{3}$$

№2

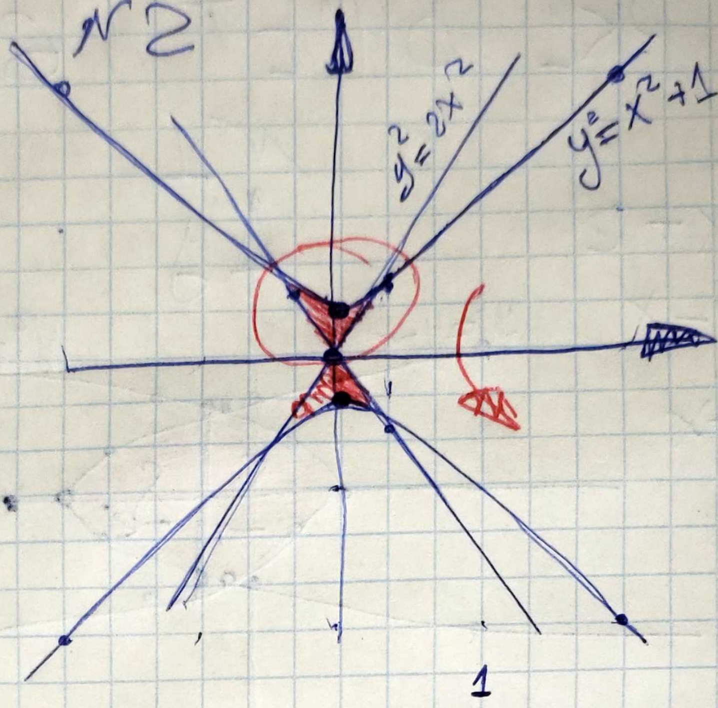
$y^2 = x^2 + 1$

$y^2 = 2x^2$

$2x^2 = x^2 + 1$

$x^2 = 1$

$x = \pm 1$



$$V = \pi \int_a^b (y_1^2 - y_2^2)\,dx \Rightarrow V = \pi \int_{-1}^{1} (x^2 + 1 - 2x^2)\,dx =$$

$$= \pi \int_{-1}^{1} (1 - x^2)\,dx = \pi \left(x - \frac{x^3}{3} \right)\Big|_{-1}^{1} = \pi \left(1 - \frac{1}{3} + 1 - \frac{1}{3} \right)$$

$\frac{2}{3}$

$$\frac{4\pi}{3}$$

№5

II род

$$\int_0^1 \frac{\sqrt{x}}{\ln(1+x)}\,dx$$

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

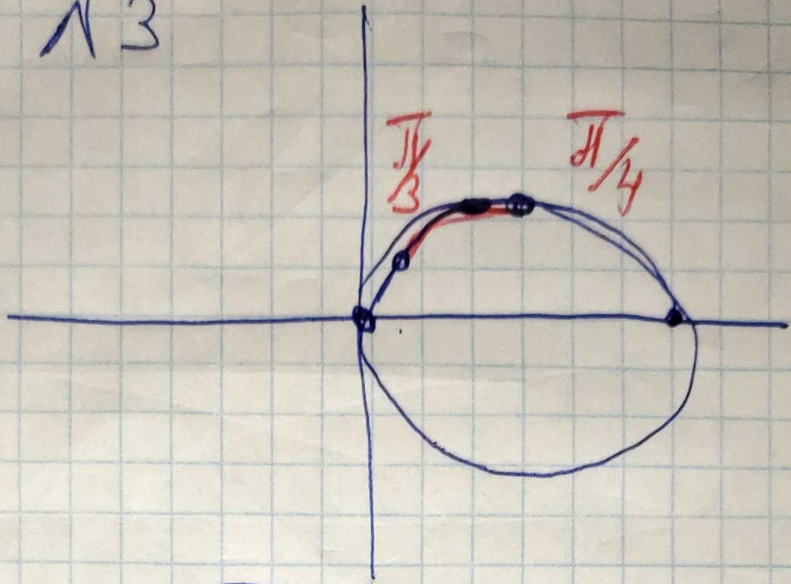
$$\frac{\sqrt{x}}{\ln(1+x)} \leq \frac{\sqrt{x}}{x} < \frac{1}{\sqrt{x}}$$

$\sim x$

сходится

№3

$\rho = \cos\varphi$



$$S_x = 2\pi\int_{\pi/4}^{\pi/3} \cos\varphi\cdot\sin\varphi\cdot\underbrace{\sqrt{\cos^2\varphi+\sin^2\varphi}}_{1}\,d\varphi$$

$$\frac{\cancel{2}\pi\sin^2\varphi}{\cancel{2}} = \left(\pi\sin^2\varphi\right)\Big|_{\pi/4}^{\pi/3} = \frac{3\pi}{4} - \frac{\pi}{4} = \frac{\pi}{2}$$

$$\int_1^{+\infty}\frac{x+\sqrt{x+1}}{x^2+2\sqrt[6]{x^4+1}}$$

№4

I род

$$\frac{\cancel{x}\left(1+\sqrt{\frac{1}{x}+\frac{1}{x^2}}\right)}{\cancel{x}\left(x+2\sqrt[6]{\frac{1}{x^2}+\frac{1}{x^6}}\right)} \leq \frac{1}{x}$$

$q = 1 \quad q \geq 1$