

$$\left(\frac{x}{a} + \frac{y}{b}\right)^3 = \frac{xy}{c^2} \quad ; \quad a, b, c > 0$$

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$$x = a\rho \cos^2 t$$

$$y = b\rho \sin^2 t$$

$$; \quad \boxed{x \cdot y > 0}$$

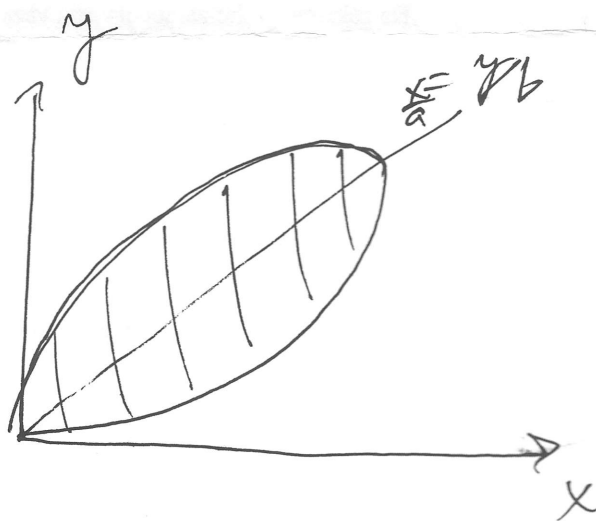
$$J = \begin{pmatrix} a c^2 & -2a\rho c s \\ b s^2 & 2b\rho c s \end{pmatrix}$$

$$|\det J| = |c^3 s + c s^3| 2ab\rho =$$

$$= 2ab\rho c s$$

$$\rho^3 = \frac{ab}{c^2} \rho^2 c^2 s^2$$

$$\rho = \frac{ab}{c^2} c^2 s^2$$



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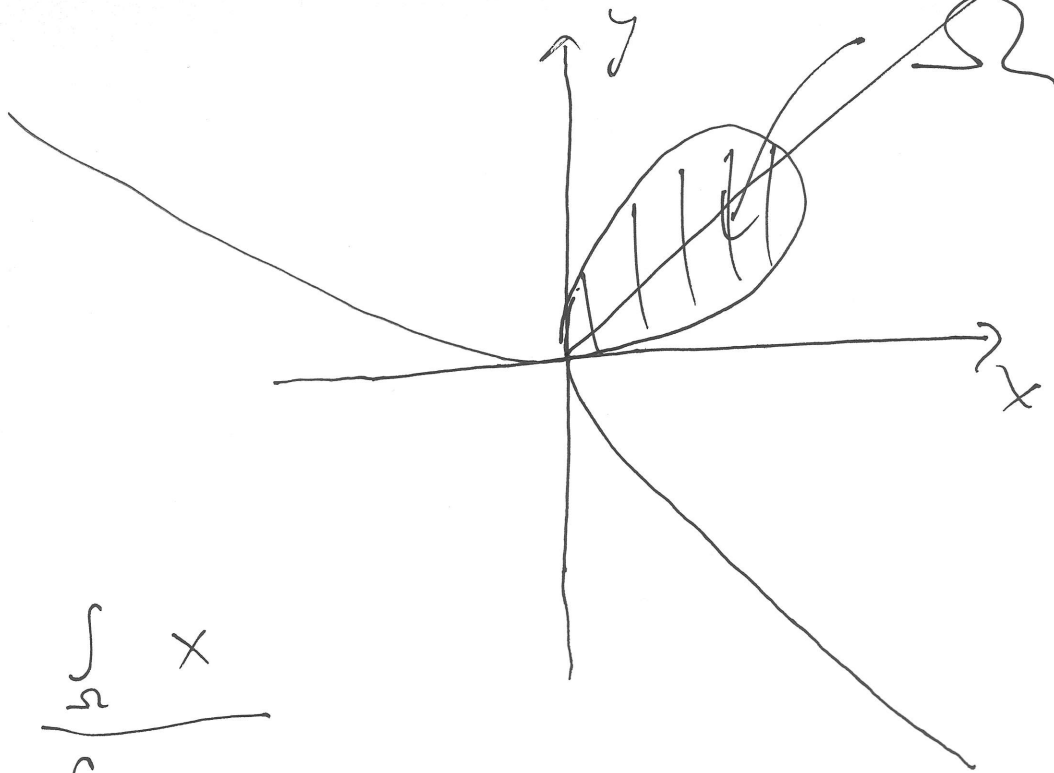
• mi $x, y < 0$ kładę nie je lew

$$\begin{cases} x \cdot y > 0 \\ (x+y)^3 < 0 \end{cases}$$

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• mi $x \cdot y < 0$ (tj. $(+, -) \vee (-, +)$)

je krivka NEOHRANIČENA



$$\frac{x}{a} = \frac{y}{b}$$

$$X_T = \frac{\int_{\Omega} x}{\int_{\Omega} 1}$$

$$\int_{\Omega} 1 = \int_0^{\pi/2} dt \int_0^{\frac{ab}{c^2} \frac{c^2}{t} \frac{c^2}{t}} d\rho \cdot 2ab\rho \frac{c}{t} \frac{1}{t} =$$

$$= 2ab \frac{1}{2} \int_0^{\pi/2} dt \frac{a^2 b^2}{c^4} \frac{c^5}{t} \frac{c^5}{t} =$$

$$= \frac{a^3 b^3}{c^4} \int_0^{\pi/2} dt \frac{c^5}{t} \frac{c^5}{t} = \frac{1}{60} \frac{a^3 b^3}{c^4}$$

$$\int_{\Omega} x = \int_0^{\pi/2} dt \int_0^{\frac{ab}{c^2} \frac{c^2}{t} \frac{c^2}{t}} 2ab\rho \frac{c}{t} \frac{1}{t} a\rho \frac{c}{t} =$$

$$= 2ab \int_0^{\pi/2} dt \frac{1}{3} \frac{a^3 b^3}{c^6} \frac{c^9}{t} \frac{c^7}{t} =$$

$$= \frac{2}{3} \frac{a^5 b^4}{c^6} \frac{1}{560}$$

$$X_T = \frac{\frac{2}{3} \frac{a^5 b^4}{c^6} \frac{1}{560}}{\frac{1}{60} \frac{a^3 b^3}{c^4}} =$$

$$= \frac{1}{14} \frac{a^2 b}{c^2}$$