$\mathrm{Im}(f) = [1, +\infty)$

ODREDITI SVE ŽIVO ZA:

$$f(x,y) = \sqrt{\underbrace{9-(x+2)^2+(y-1)^2}_{\geq 0}} + 1 \geq 1$$

DOMENA ↗

SLIKA (VRIJEDNOSTI)

RAZINSKE KRIVULJE

DOMENA: $D(f) = \{(x,y) : 9-(x+2)^2+(y-1)^2 \geq 0\}$

$$9-(x+2)^2+(y-1)^2 \geq 0$$

$$9-(x+2)^2+(y-1)^2 = 0$$

$$+(x+2)^2-(y-1)^2 = +9$$

$x^2 \quad y^2 \quad = 1$

CENTAR HIPERBOLE: $T(-2,1)$

$(y-1)^2 = (x+2)^2 - 9$

KRUŽNICA (ELIPSA) PR. $x^2+y^2=1$

$$a(x-x_0)^2+b(y-y_0)^2=R^2$$

PARABOLA

PR. $y=x^2$

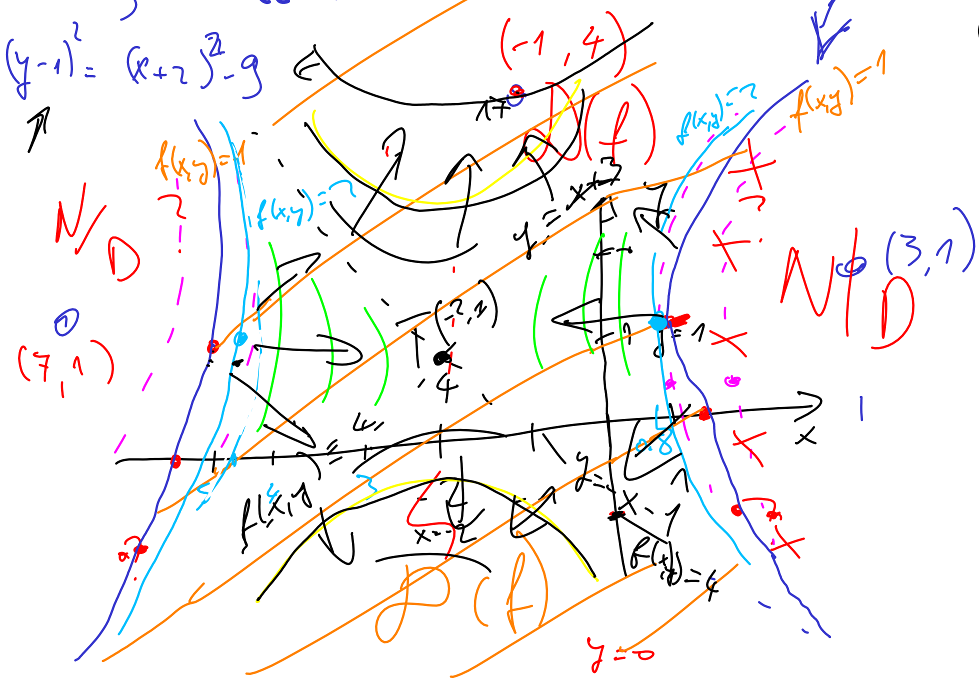
$$y-y_0 = a(x-x_0)^2$$

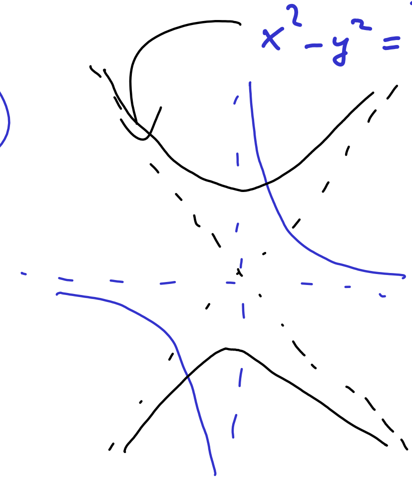
HIPERBOLA ?

$$a(x-x_0)^2-b(y-y_0)^2=R$$

$y=\frac{1}{x}$ ✓

$x^2-y^2=1$ ✓





$y=-1$

$y=1$

$(x+2)^2 = 9$

$x+2=\pm 3$

$x=-5 \Rightarrow (-5,1)$

$x=1 \Rightarrow (1,1)$

$1=(x+2)^2-9$

$(x+2)^2=10$

$x+2=\pm\sqrt{10}\approx 3.2$

$x=-2\pm\sqrt{10} \to \begin{matrix}-5.2\\ 1.2\end{matrix}$

$4=(x+2)^2-9$

$(x+2)^2=13$

$x+2=\pm\sqrt{13}\approx\pm 3.4$

$x \to -3.4$, $x \to -1.4$

$f(x,y)=2=\sqrt{9-(x+2)^2+(y-1)^2}+1 \Rightarrow 1=\sqrt{-\,\text{II}\,-}$

$(x+2)^2=8$ $\quad x+2=\pm\sqrt{8}\approx\pm 2.8$ $\quad x=-4.8,\ 0.8$

$(x+2)^2 = 8 =$ $\quad 1=9-(x+2)^2+(y-1)^2$ $\quad (y-1)^2$ $\quad y=1$

$$x^2 = y^2 \to x = y, \quad \to -x = y$$

$$-(x+2)^2 + (y-1)^2 = 0$$

$$(y-1)^2 = (x+2)^2$$

$$\to y-1 = x+2 \to y = x+3$$

$$\to -(y-1) = x+2 \to y = -x-1$$

$$\int_0^{\pi} \sin^2 x \cos^2 x \, dx = \left\{ \begin{array}{l} \cos^2(2x) = \dfrac{1+\cos(4x)}{2} \\ \sin^2 x = \dfrac{1-\cos(2x)}{2} \end{array} \right\}$$

$$= \int_0^{\pi} \left(\frac{1}{2} - \frac{\cos(2x)}{2}\right)\left(\frac{1}{2} + \frac{\cos(2x)}{2}\right) dx$$

$$= \int_0^{\pi} \frac{1}{4} + \cancel{\frac{\cos(2x)}{4}} - \cancel{\frac{\cos(2x)}{4}} - \frac{\cos^2(2x)}{4} \, dx$$

$$= \int_0^{\pi} \frac{1}{4} dx - \int_0^{\pi} \frac{\cos^2(2x)}{4} dx$$

$$= \frac{\pi}{4} - \frac{1}{4} \int_0^{\pi} \frac{1+\cos(4x)}{2} dx = \left\{ \begin{array}{l} t = 4x \\ dt = 4dx \end{array} \right\}$$

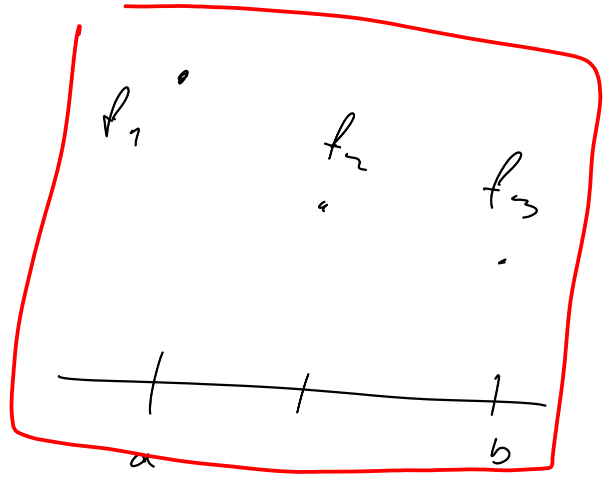
$$= \frac{\pi}{4} - \frac{1}{8} \left(\underbrace{\int_0^{\pi} 1 \, dx}_{\pi} + \underbrace{\int_0^{\pi} \cos(4x) \, dx}_{\underbrace{\left[-\frac{\sin(4x)}{4}\right]_0^{\pi}}_{=0}} \right)$$

$$\frac{\pi}{4} - \frac{\pi}{8} = \frac{2\pi - \pi}{8} = \frac{\pi}{8}$$

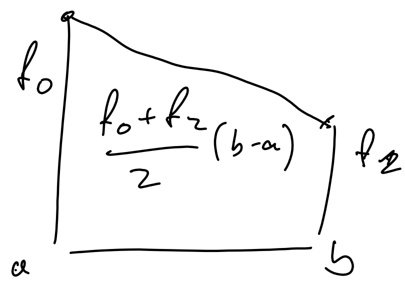
$$= \frac{\pi}{8}$$

$$\int_0^{\pi} \underbrace{\sin^2 x \, \cos^2 x}_{f(x)} \, dx =$$

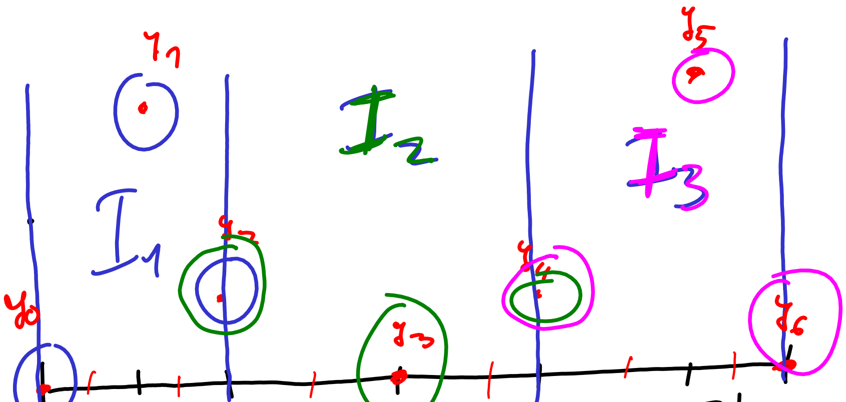
SIMPSONOVA METODA:



$$\boxed{\frac{b-a}{6}\left(f_0+4f_1+f_2\right)} = I$$



$n=6$



x_i	0	$\frac{\pi}{6}$	$\frac{2\pi}{6}$	$\frac{3\pi}{6}$	$\frac{4\pi}{6}$	$\frac{5\pi}{6}$	π
y_i $f(x_i)$	0	$\cancel{0.89}$ 0.19	0.19	0	0.19	$\cancel{0.89}$ 0.19	0
	$i=0$	$i=1$				$i=3$	

$$I_1 = \frac{\frac{2\pi}{6}}{6}\left(y_0+4y_1+y_2\right) = \frac{\frac{2\pi}{6}}{6}\left(0+4\cdot \overset{0.19}{\cancel{0.89}}+0.19\right) = 0.\overset{17}{\cancel{65}}$$

$$I_2 = \frac{\frac{2\pi}{6}}{6}\left(y_2+4y_3+y_4\right) = \frac{\frac{2\pi}{6}}{6}\left(0.19+4\cdot 0+0.19\right) = 0.07$$

$$I_3 = \frac{\frac{2\pi}{6}}{6}\left(y_4+4y_5+y_6\right) = \frac{\frac{2\pi}{6}}{6}\left(0.19+4\cdot \underset{0.19}{\cancel{0.89}}+0\right) = 0.\overset{17}{\cancel{65}}$$

$$\boxed{0.41}$$

$$\cancel{1.37}$$

$$I = I_1+I_2+I_3 =$$

$n=12$

i	x_i	y_i
0	0	0
1	$\pi/12$	0.79
2	$\pi/6$	0.89
3	$3\pi/12$	0.25
4	$2\pi/6$	0.19
5	$5\pi/12$	0.06
6	$3\pi/6$	0
7	$7\pi/12$	0.06
8	$4\pi/6$	0.19
9	$9\pi/12$	0.25
10	$5\pi/6$	0.89
11	$11\pi/12$	0.79
12	π	0

I_5

$$I_1 = \frac{\pi/6}{6}\left(0+4\cdot 0.79+0.89\right) = 0.35$$

$$I_2 = \frac{\pi}{36}\left(0.89+4\cdot 0.25+0.19\right) = 0.18$$

$$I_3 = \frac{\pi}{36}\left(0.19+4\cdot 0.06+0\right) = 0.037$$

$$I_4 = \frac{\pi}{36}\left(0+4\cdot 0.06+0.19\right) = I_3 = 0.037$$

$$I_5 = \frac{\pi}{36}\left(0.19+4\cdot 0.25+0.89\right) = I_2 = 0.18$$

$$I_6 = \frac{\pi}{36}\left(0.89+4\cdot 0.79+0\right) = I_1 = 0.35$$

$$1.134 \quad +$$

greška $\sim c\cdot d^3$