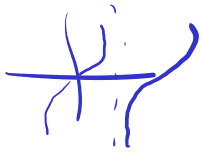
$$\int \frac{1}{\underbrace{\sin^2 x + 2\cos^2 x}_{g(x)}}\,dx$$

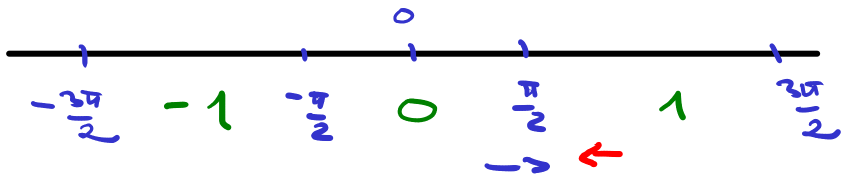
spoj: na $\mathbb{R}$ $\to$ PF hkodarne na $\mathbb{R}$

$t = \tan x \rightarrow \left(-\frac{\pi}{2}, \frac{\pi}{2}\right) + k\pi = (\alpha, \beta)$

$$\int \frac{1}{2+t^2}\,dt = \frac{\sqrt{2}}{2} \arctan \frac{t}{\sqrt{2}} + c = \overbrace{\frac{\sqrt{2}}{2} \arctan\left(\frac{\tan x}{\sqrt{2}}\right) + c_k}^{F_k}$$

$\hookrightarrow x \in \left(-\frac{\pi}{2}, \frac{\pi}{2}\right) + k\pi$





$$\lim_{x \to \frac{\pi}{2}^-} F_k = \lim_{x \to \frac{\pi}{2}^-} \frac{\sqrt{2}}{2} \arctan \frac{\tan x}{\sqrt{2}} + c_k = \frac{\pi}{2} \cdot \frac{\sqrt{2}}{2} + c_k$$

$\left(\frac{\pi}{2} + k\pi\right)^-$ $\quad$ $\left(\frac{\pi}{2} + k\pi\right)^-$ $\quad$ "arctan ∞"

$$\lim_{x \to \left(\frac{\pi}{2}+k\pi\right)^+} F_{k+1} = \lim_{x \to \left(\frac{\pi}{2}+k\pi\right)^+} \frac{\sqrt{2}}{2} \arctan \frac{\tan x}{\sqrt{2}} + c_{k+1} = -\frac{\sqrt{2}}{2}\frac{\pi}{2} + c_{k+1}$$

"arctan $-\infty$"

Ch cone:

$$\frac{\sqrt{2}\pi}{4} + c_k = -\frac{\sqrt{2}\pi}{4} + c_{k+1}$$

$$c_k + \frac{\sqrt{2}\pi}{2} = c_{k+1}$$

$$F(x) = \begin{cases} \frac{\sqrt{2}}{2} \arctan \frac{\tan x}{\sqrt{2}} + \cancel{c_k}\; c_0 + \frac{k\pi\sqrt{2}}{2} & x \in \left(-\frac{\pi}{2}, \frac{\pi}{2}\right) + k\pi \\ \frac{\sqrt{2}\pi}{4} + \cancel{c_k}\; c_0 + \frac{k\pi\sqrt{2}}{2} & x = \frac{\pi}{2} + k\pi \end{cases}$$

Fix c_0 $\qquad$ $c_k = k \cdot \frac{\pi\sqrt{2}}{2} + c_0$

c_0 $\qquad$ $c_1 = c_0 + \frac{\sqrt{2}\pi}{2}$ $\qquad$ $c_2 = c_1 + \frac{\sqrt{2}\pi}{2} = c_0 + \frac{\sqrt{2}\pi}{2} + \frac{\sqrt{2}\pi}{2}$

$$\int \frac{\sin x}{1-\cos^2 x}\,dx \to \quad x \in (0,\pi) + 2\pi$$

$t = \cos x \qquad x \in (0,\pi) + 2\pi \qquad$ Nelepšíme

$\to$ <u>není</u> <u>třeba</u> !