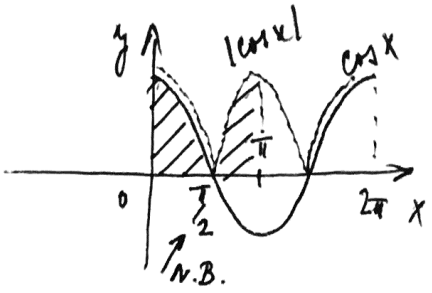
Určitý integrál

(Př) $\int_0^{\pi} \overbrace{|\cos x|}^{f(x)}\, dx$



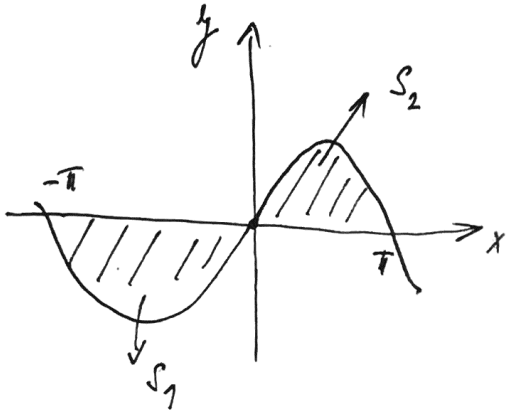
$$f(x) = \begin{cases} \cos x & \text{pro } x \in \langle 0; \frac{\pi}{2} \rangle \\ -\cos x & \text{pro } x \in \langle \frac{\pi}{2}; \pi \rangle \end{cases}$$

$$= \int_0^{\pi/2} \cos x\, dx + \int_{\pi/2}^{\pi} -\cos x\, dx$$

$$= [\sin x]_0^{\pi/2} + [-\sin x]_{\pi/2}^{\pi} =$$

$$= 1 - 0 + (-0 - (-1)) = \underline{\underline{2}}$$

(Př) - lichá fce

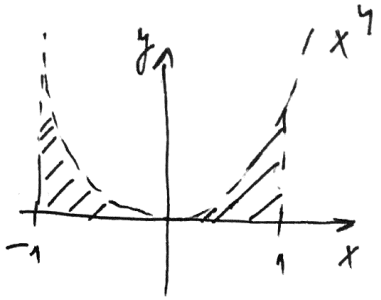


$$\int_{-\pi}^{\pi} \sin x\, dx = \overbrace{\int_0^{\pi} \sin x\, dx}^{S_2} + \underbrace{\int_{-\pi}^{0} \sin x\, dx}_{-S_1}$$

$$= \underline{\underline{0}}$$

$$\int_{-a}^{a} f(x)\, dx = \underline{\underline{0}} \quad \text{(lichá)}$$

(Př) sudá fce



$$\int_{-1}^{1} x^4\, dx = 2 \cdot \int_0^1 x^4\, dx$$

$$= 2 \cdot \left[\frac{x^5}{5}\right]_0^1 = 2 \cdot \left(\frac{1}{5} - 0\right) = \underline{\underline{\frac{2}{5}}}$$

$$\int_{-a}^{a} f(x)\, dx = 2 \cdot \int_0^a f(x)\, dx \quad \text{(sudá)}$$