Zadatak 12. Kolika je površina lika omeđenog pravcima $x = -\frac{\pi}{4}$, $x = \frac{\pi}{4}$, krivuljom $y = \cos x$ i tangentama na tu krivulju položenu u točkama s apscisama $\frac{\pi}{4}$ i $-\frac{\pi}{4}$?

Rješenje. $y = \pm\frac{\sqrt{2}}{2}x + \frac{\sqrt{2}}{2}\left(\frac{\pi}{4}+1\right)$ — tangente.

$P = 2\int_0^{\pi/4}\left(-\frac{\sqrt{2}}{2}x + \frac{\sqrt{2}}{2}\left(\frac{\pi}{4}+1\right) - \cos x\right)dx = 2\left(-\frac{\sqrt{2}}{4}x^2 + \frac{\sqrt{2}}{2}\left(\frac{\pi}{4}+1\right)x - \sin x\right)\Big|_0^{\pi/4} = 2\left(-\frac{\sqrt{2}}{4}\frac{\pi^2}{16} + \frac{\sqrt{2}}{2}\left(\frac{\pi}{4}+1\right)\frac{\pi}{4} - \frac{\sqrt{2}}{2}\right. = -\frac{\sqrt{2}}{32}\pi^2 + \frac{\sqrt{2}}{16}\pi^2 + \frac{\sqrt{2}}{4}\pi - \sqrt{2} = \frac{\sqrt{2}}{32}(\pi^2 + 8\pi - 32)$.