Zadatak 42. Dane su funkcije $f(x) = \sin\frac{\pi x}{4} \cdot \cos\frac{\pi x}{4}$,
$g(x) = \cos\left(\frac{\pi}{6} - x\right) \cdot \cos\left(\frac{\pi}{6} + x\right)$. Izračunaj $(f \circ g)\left(\frac{35\pi}{6}\right)$.

Rješenje. $f(x) = \sin\frac{\pi x}{4}\cos\frac{\pi x}{4}$, $g(x) = \cos\left(\frac{\pi}{6} - x\right)\cos\left(\frac{\pi}{6} + x\right)$, $(f \circ g)\left(\frac{35\pi}{6}\right) = ?$

$$g\left(\frac{35\pi}{6}\right) = \cos\left(\frac{\pi}{6} - \frac{35\pi}{6}\right)\cos\left(\frac{\pi}{6} + \frac{35\pi}{6}\right) = \cos\left(\frac{-34\pi}{6}\right)\cos\frac{36\pi}{6}$$
$$= \cos\frac{2\pi}{6}\cos 6\pi = \cos\frac{\pi}{3}\cos 0 = \frac{1}{2}\cdot 1 = \frac{1}{2}$$
$$f\left(\frac{1}{2}\right) = \sin\frac{\pi}{8}\cos\frac{\pi}{8} = \frac{1}{2}\sin\frac{\pi}{4} = \frac{1}{2}\cdot\frac{\sqrt{2}}{2} = \frac{\sqrt{2}}{4}.$$