Zadatak 18. Ako je $\sin\frac{x}{2}+\cos\frac{x}{2}=-\frac{1}{2}$, $x\in\langle\frac{3\pi}{2},2\pi\rangle$, koliko je $\sin 2x$?

Rješenje. $x\in\langle\frac{3\pi}{2},2\pi\rangle \implies \cos x>0$

$$\left(\sin\frac{x}{2}+\cos\frac{x}{2}\right)^2=\sin^2\frac{x}{2}+2\sin\frac{x}{2}\cos\frac{x}{2}+\cos^2\frac{x}{2}=1+\sin x=\frac{1}{4} \implies \sin x=-\frac{3}{4}$$

$$\cos x=\sqrt{1-\sin^2 x}=\sqrt{1-\frac{9}{16}}=\frac{\sqrt{7}}{4}$$

$$\sin 2x=2\sin x\cos x=2\cdot\left(-\frac{3}{4}\right)\cdot\frac{\sqrt{7}}{4}=-\frac{3\sqrt{7}}{8}.$$