Zadatak 2.

1) $\sin 2x < \frac{\sqrt{2}}{2}$;

2) $\cos \frac{x}{2} \geqslant -\frac{\sqrt{3}}{2}$;

3) $\cos 3x < \frac{1}{2}$;

4) $-\sqrt{3} \cdot \operatorname{tg} x \leqslant 3$;

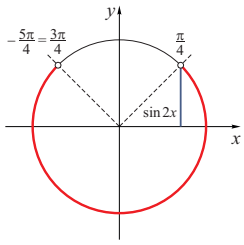
5) $-3 \cdot \operatorname{ctg} x \geqslant \sqrt{3}$.

Rješenje.

1) $\sin 2x < \frac{\sqrt{2}}{2}$

$-\frac{5\pi}{4} + 2k \cdot \pi < 2x < \frac{\pi}{4} + 2k \cdot \pi,\ k \in \mathbf{Z},$

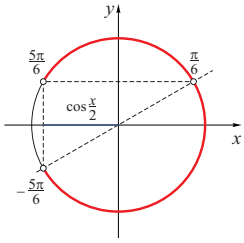
$-\frac{5\pi}{8} + k \cdot \pi < x < \frac{\pi}{8} + k \cdot \pi,\ k \in \mathbf{Z};$



2) $\cos \frac{x}{2} \geqslant -\frac{\sqrt{3}}{2}$;

$-\frac{5\pi}{6} + k \cdot 2\pi \leqslant \frac{x}{2} \leqslant \frac{5\pi}{6} + k \cdot 2\pi,\ k \in \mathbf{Z};$

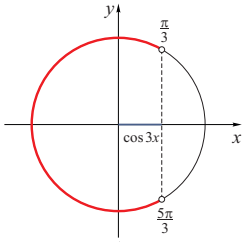
$-\frac{5\pi}{3} + k \cdot 4\pi \leqslant x \leqslant \frac{5\pi}{3} + k \cdot 4\pi,\ k \in \mathbf{Z}.$



3) $\cos 3x < \frac{1}{2}$;

$\frac{\pi}{3} + k \cdot 2\pi < 3x < \frac{5\pi}{3} + k \cdot 2\pi,\ k \in \mathbf{Z};$

$\frac{\pi}{9} + k \cdot \frac{2\pi}{3} < x < \frac{5\pi}{9} + k \cdot \frac{2\pi}{3},\ k \in \mathbf{Z}.$

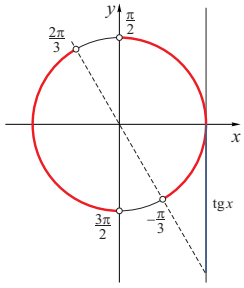


4) $-\sqrt{3} \cdot \operatorname{tg} x \leqslant 3$;

$\operatorname{tg} x \geqslant -\sqrt{3};$

$\operatorname{tg} \frac{2\pi}{3} = -\sqrt{3}$

$-\frac{\pi}{3} + k \cdot \pi \leqslant x < \frac{\pi}{2} + k \cdot \pi,\ k \in \mathbf{Z};$



5) $-3 \cdot \operatorname{ctg} x \geqslant \sqrt{3}$;

$\operatorname{ctg} x \leqslant -\frac{\sqrt{3}}{3};$

$\operatorname{ctg} \frac{2\pi}{3} = -\frac{\sqrt{3}}{3};$

$\frac{2\pi}{3} + k \cdot \pi \leqslant x < (k+1)\pi,\ k \in \mathbf{Z}.$