Zadatak 2.

1) $4\sqrt{3}\sin\left(3x-\frac{3\pi}{8}\right)-6=0\,;$

2) $\sqrt{3}+3\operatorname{ctg}\left(\frac{\pi}{4}-3x\right)=0\,;$

3) $3+\sqrt{3}\operatorname{tg}\left(\frac{\pi}{3}-\frac{x}{4}\right)=0\,;$

4) $\dfrac{\sqrt{3}}{\cos\left(3x-\frac{\pi}{3}\right)}=2\,;$

5) $\dfrac{1}{\sin\left(4x+\frac{\pi}{6}\right)}=2\,.$

Rješenje. **1)**

$$4\sqrt{3}\sin\left(3x-\frac{3\pi}{8}\right)-6=0$$
$$\sin\left(3x-\frac{3\pi}{8}\right)=\frac{6}{4\sqrt{3}}$$
$$\sin\left(3x-\frac{3\pi}{8}\right)=\frac{\sqrt{3}}{2}$$
$$3x_1-\frac{3\pi}{8}=\frac{\pi}{3}+2k\pi \qquad 3x_2-\frac{3\pi}{8}=\frac{2\pi}{3}+2k\pi$$
$$3x_1=\frac{17\pi}{24}+2k\pi \qquad 3x_2=\frac{25\pi}{24}+2k\pi$$
$$x_1=\frac{17\pi}{72}+\frac{2k\pi}{3} \qquad x_2=\frac{25\pi}{72}+\frac{2k\pi}{3}, \qquad k\in\mathbf{Z}$$

2)

$$\sqrt{3}+3\operatorname{ctg}\left(\frac{\pi}{4}-3x\right)=0$$
$$3\operatorname{ctg}\left(\frac{\pi}{4}-3x\right)=-\sqrt{3} \quad /:3$$
$$\operatorname{ctg}\left(\frac{\pi}{4}-3x\right)=-\frac{\sqrt{3}}{3}$$
$$\frac{\pi}{4}-3x=\frac{2\pi}{3}+k\pi$$
$$-3x=\frac{5\pi}{12}+k\pi \quad /:(-3)$$
$$x=-\frac{5\pi}{36}-\frac{k\pi}{3},\ \ k\in\mathbf{Z};$$

3)

$$3+\sqrt{3}\,\mathrm{tg}\left(\frac{\pi}{3}-\frac{x}{4}\right)=0$$
$$\sqrt{3}\,\mathrm{tg}\left(\frac{\pi}{3}-\frac{x}{4}\right)=-3 \quad /:\sqrt{3}$$
$$\mathrm{tg}\left(\frac{\pi}{3}-\frac{x}{4}\right)=-\sqrt{3}$$
$$\frac{\pi}{3}-\frac{x}{4}=-\frac{\pi}{3}+k\pi$$
$$-\frac{x}{4}=-\frac{2\pi}{3}+k\pi \quad /\cdot(-4)$$
$$x=\frac{8\pi}{3}-4k\pi,\ \ k\in\mathbf{Z};$$

4)

$$\frac{\sqrt{3}}{\cos\left(3x-\frac{\pi}{3}\right)}=2 \quad \Big/\cdot\cos\left(3x-\frac{\pi}{3}\right)$$
$$2\cos\left(3x-\frac{\pi}{3}\right)=\sqrt{3}$$
$$\cos\left(3x-\frac{\pi}{3}\right)=\frac{\sqrt{3}}{2}$$
$$3x-\frac{\pi}{3}=\pm\frac{\pi}{6}+2k\pi$$
$$3x=\frac{\pi}{3}\pm\frac{\pi}{6}+2k\pi \quad /:3$$
$$x=\frac{\pi}{9}\pm\frac{\pi}{18}+\frac{2k\pi}{3}$$
$$x_1=\frac{\pi}{6}+k\cdot\frac{2\pi}{3},\ \ x_2=\frac{\pi}{18}+k\cdot\frac{2\pi}{3},\ \ k\in\mathbf{Z};$$

5)

$$\frac{1}{\sin\left(4x+\frac{\pi}{6}\right)}=2$$
$$2\sin\left(4x+\frac{\pi}{6}\right)=1$$
$$\sin\left(4x+\frac{\pi}{6}\right)=\frac{1}{2}$$

$$4x_1+\frac{\pi}{6}=\frac{\pi}{6}+2k\pi \qquad 4x_2+\frac{\pi}{6}=\frac{5\pi}{6}+2k\pi$$
$$4x_1=2k\pi \qquad 4x_2=\frac{4\pi}{6}+2k\pi \qquad k\in\mathbf{Z}.$$
$$x_1=\frac{k\pi}{2} \qquad x_2=\frac{\pi}{6}+\frac{k\pi}{2}$$