

$$2\sqrt{3}\sin^2(x/2) + 2 = 2\sin^2(x) + \sqrt{3}$$

$$2\sqrt{3} \cdot (1 - \cos x) / 2 + 2 = 2\sin^2(x) + \sqrt{3}$$

$$2\sqrt{3} \cdot (1 - \cos x) / 2 + 2 = 2 \cdot (1 - \cos^2 x) + \sqrt{3}$$

$$\cos x = y$$

$$2\sqrt{3} \cdot (1 - y) / 2 + 2 = 2 \cdot (1 - y^2) + \sqrt{3}$$

$$\sqrt{3} \cdot (1 - y) + 2 = 2 \cdot (1 - y^2) + \sqrt{3}$$

$$\sqrt{3} - \sqrt{3}y + 2 = 2 - 2y^2 + \sqrt{3}$$

$$2y^2 - \sqrt{3}y = 0$$

$$y(2y - \sqrt{3}) = 0$$

$$y = 0$$

$$2y - \sqrt{3} = 0$$

$$y = \sqrt{3}/2$$

$$\cos x = 0$$

$$x = \pi/2 + \pi k$$

$$\cos x = \sqrt{3}/2$$

$$x = \pm \pi/6 + 2\pi k$$

Ответ: $\pi/2 + \pi k; \pm \pi/6 + 2\pi k.$

