

$$(2+3\cos 2x) \cdot (\sqrt{2\cos 2x + 3\sin x + 3}) - 2\sin x + 1 = 0$$

$$(2\cos 2x + 3\sin x + 3) \geq 0$$

$$2\sin x - 1 \geq 0$$

$$(2+3\cos 2x) = 0$$

$$\sqrt{2\cos 2x + 3\sin x + 3} = 2\sin x - 1$$

$$2\cos 2x + 3\sin x + 3 = 4\sin^2 x - 4\sin x + 1$$

$$2 - 4\sin^2 x + 3\sin x + 3 = 4\sin^2 x - 4\sin x + 1$$

$$2 + 3 = 8\sin^2 x - 7\sin x + 1$$

$$8\sin^2 x - 7\sin x - 4 = 0$$

$$\sin x = t$$

$$8t^2 - 7t - 4 = 0$$

$$D = 49 + 128 = 177$$

$$x_1 = (7 - \sqrt{177})/16$$

$$x_2 = (7 + \sqrt{177})/16$$

$$(7 - \sqrt{177})/16 = \sin x$$

$$(7 + \sqrt{177})/16 \neq \sin x$$

$$x = \pi - \arcsin((7 - \sqrt{177})/16) + 2\pi k$$

$$x = \arcsin((7 - \sqrt{177})/16) + 2\pi k$$

$$2 + 3\cos 2x = 0$$

$$3\cos 2x = -2$$

$$\cos 2x = -\frac{2}{3}$$

$$2x = \pm \arccos(-\frac{2}{3}) + 2\pi k$$

$$x = \pm \arccos(-\frac{2}{3})/2 + \pi k$$

$$2\sin x \geq 1$$

$$\sin x \geq \frac{1}{2}$$

$$\pi/6 + 2\pi k \leq x \leq 5\pi/6 + 2\pi k$$

$$(2+3\cos 2x) \cdot (\sqrt{2\cos 2x + 3\sin x + 3}) - 2\sin x + 1 = 0$$

$$(5-6\sin^2 x) \cdot (\sqrt{-4\sin^2 x + 3\sin x + 5}) - 2\sin x + 1 = 0$$

$$\sin x = t$$

$$(5-6t^2) \cdot (\sqrt{-4t^2+3t+5}) - 2t+1 = 0$$

$$5-6t^2 = 0$$

$$6t^2 = 5$$

$$t^2 = \frac{5}{6}$$

$$t = \pm \sqrt{\frac{5}{6}} \text{ только } + \text{ подходит}$$

$$-4t^2 + 3t + 5 \geq 0$$

$$-4t^2 + 3t + 5 = 0$$

$$D = 9 + 80 = 89$$

$$t_1 = (3 - \sqrt{89})/8 = -6/8$$

$$t_2 = (3 + \sqrt{89})/8 = 12/8 = 3/2$$

$$t \in ((3 - \sqrt{89})/8; (3 + \sqrt{89})/8)$$

$$-\sqrt{5/6} < (3 - \sqrt{89})/8$$

$$t \geq 1/2$$

$$\sqrt{-4t^2+3t+5} - 2t + 1 = 0$$

$$\sqrt{-4t^2+3t+5} = 2t - 1$$

$$8t^2 - 7t - 4 = 0$$

$$D = 49 + 128 = 177$$

$$t_1 = (7 - \sqrt{177})/16$$

$$t_2 = (7 + \sqrt{177})/16$$

$$t_1 = (7 - 18)/16 < 1/2$$

$$t_2 = (7 + 18)/16 > 1/2$$

$$x = \pi - \arcsin(\sqrt{5/6}) + 2\pi k$$

$$x_2 = \arcsin(\sqrt{5/6}) + 2\pi k$$

Ответ: $\arcsin(\sqrt{5/6}) + 2\pi k, \pi - \arcsin(\sqrt{5/6}) + 2\pi k$

