

$$\cos x \cdot \sin(x/4) + 9/10 \cdot \sin x + 2\sin(x/4) \cdot \cos(x/2) + \sin(x/4) - 1/2 \cdot \cos(x/4) - 9/20 = 0$$

x лежит в $[-9P/2; -3P/2]$

$$(\cos x \cdot \sin(x/4) + \sin(x/4)) + 9/10 \cdot \sin x + 2\sin(x/4) \cdot \cos(x/2) - 1/2 \cdot \cos(x/4) - 9/20 = 0$$

$$\sin(x/4)(\cos x + 1) + 9/10 \cdot \sin x + 2\sin(x/4) \cdot \cos(x/2) - 1/2 \cdot \cos(x/4) - 9/20 = 0$$

$$\sin(x/4)(\cos x + 1 + 2\cos(x/2)) + 9(\sin x - 1/2)/10 - 1/2 \cdot \cos(x/4) = 0$$

$$\sin(x/4)(2\cos^2(x/2) + 2\cos(x/2)) + 9(\sin x - 1/2)/10 - 1/2 \cdot \cos(x/4) = 0$$

$$\sin(x/4)2\cos(x/2)(\cos(x/2) + 1) + 9(\sin x - 1/2)/10 - 1/2 \cdot \cos(x/4) = 0$$

$$\sin(x/4)2\cos(x/2)2\cos^2(x/4) + 9(\sin x - 1/2)/10 - 1/2 \cdot \cos(x/4) = 0$$

$$\cos(x/4)(\sin(x/4)2\cos(x/2)2\cos(x/4) - 1/2) + 9(\sin x - 1/2)/10 = 0$$

$$\cos(x/4)(\sin(x/2)2\cos(x/2) - 1/2) + 9(\sin x - 1/2)/10 = 0$$

$$\cos(x/4)(\sin x - 1/2) + 9(\sin x - 1/2)/10 = 0$$

$$(\sin x - 1/2)(\cos(x/4) + 9/10) = 0$$

$$\sin x - 1/2 = 0$$

$$\sin x = 1/2$$

$$x = P/6 + 2Pk$$

$$x = 5P/6 + 2Pk$$

$$\cos(x/4) + 9/10 = 0$$

$$\cos(x/4) = -9/10$$

$$x/4 = \arccos(-9/10) + 2Pk$$

$$x = 4\arccos(-9/10) + 8Pk$$

$$x = -4\arccos(-9/10) + 8Pk$$

Отбор корней

$$1) x = P/6 + 2Pk$$

$$-9P/2 \leq P/6 + 2Pk \leq -3P/2 \quad | \cdot 6/P$$

$$-27 \leq 12k \leq -9$$

$$-9/4 \leq k \leq -3/4$$

$$k_1 = -1$$

$$k_2 = -2$$

$$x = P/6 - 2P = -11P/6$$

$$x = P/6 - 4P = -23P/6$$

$$\begin{aligned} \cos 2y &= 2\cos^2 y - 1 \\ 2\cos^2 y &= \cos 2y + 1 \\ \cos^2 y &= (\cos 2y + 1)/2 \\ \cos y &= \pm \sqrt{(\cos 2y + 1)/2} \\ \cos P/8 &= x \\ \cos P/4 &= \sqrt{2}/2 \\ \cos P/8 &= \pm \sqrt{((\sqrt{2}/2 + 1)/2)} = \\ &= \pm \sqrt{(\sqrt{2} + 2)/4} = \\ \arccos x &= P/8 \end{aligned}$$

$$\begin{aligned} \sqrt{(\sqrt{2} + 2)/4} &\vee 9/10 \quad | \cdot 2 \\ (\sqrt{2} + 2)/4 &\vee 81/100 \quad | \cdot 100 \\ 25(\sqrt{2} + 2) &\vee 81 \\ 25\sqrt{2} + 50 &\vee 81 \\ 25\sqrt{2} &\vee 31 \quad | \cdot 2 \\ 1250 &\vee 961 \end{aligned}$$

ОТВЕТ:

$$-11P/6$$

$$-23P/6$$

$$-19P/6$$

$$-4\arccos(-9/10)$$

Отбор корней

$$2) x = 5P/6 + 2Pk$$

$$-9P/2 \leq 5P/6 + 2Pk \leq -3P/2 \quad | \cdot 6/P$$

$$-27 \leq 5 + 12k \leq -9 \quad | -5$$

$$-32 \leq 12k \leq -14 \quad | /12$$

$$-8/3 \leq k \leq -7/6$$

$$k_2 = -2$$

$$x = 5P/6 - 4P = -19P/6$$

$$3) x = 4\arccos(-9/10) + 8Pk$$

$$-9P/2 \leq 4\arccos(-9/10) + 8Pk \leq -3P/2 \quad | /4$$

$$-9P/8 \leq \arccos(-9/10) + 2Pk \leq -3P/8$$

$$4) x = -4\arccos(-9/10) + 8Pk$$

$$-9P/2 \leq -4\arccos(-9/10) + 8Pk \leq -3P/2 \quad | /4$$

$$-9P/8 \leq -\arccos(-9/10) + 2Pk \leq -3P/8$$

$$\arccos(9/10) \vee P/8$$

$$\arccos(\sqrt{3}/2) = P/6$$

$$9/10 \vee \sqrt{3}/2 \quad | \cdot 2$$

$$81/100 > 3/4 = 75/100$$

