

$$\sqrt{2} \sin(\sqrt{P} \sqrt{5/x - x + 6}) + \sqrt{6} \cos(\sqrt{P} \sqrt{5/x^2 + 6/x - 1}) = \sqrt{8}$$

ОДЗ

$$x > 0$$

$$5/x - x + 6 \geq 0$$

$$x^2 - 6x - 5 \leq 0$$

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

$$D = 36 + 20 = 56$$

$$x_1 = (6 + \sqrt{56})/2 = (6 + 2\sqrt{14})/2 = 3 + \sqrt{14}$$

$$x_2 = (6 - \sqrt{56})/2 = 3 - \sqrt{14}$$

$$x \in (0 ; 3 + \sqrt{14})$$

$$\sqrt{2} \sin(\sqrt{P} \sqrt{5 - x^2 + 6x}) + \sqrt{6} \cos(\sqrt{P} \sqrt{5 + 6x - x^2}) = \sqrt{8}$$

$$t = \sqrt{P} \sqrt{5 - x^2 + 6x}$$

$$\sqrt{2} \sin t + \sqrt{6} \cos t = \sqrt{8}$$

$$\sin t + \sqrt{3} \cos t = 2$$

$$2(\sin t \cdot \frac{1}{2} + \cos t \cdot \frac{\sqrt{3}}{2}) = 2$$

$$\sin a = \frac{\sqrt{3}}{2}$$

$$\cos a = \frac{1}{2}$$

$$a = P/3 + 2pk$$

$$2 \sin(t + P/3) = 2$$

$$\sin(t + P/3) = 1$$

$$t = P/2 + 2pk - P/3$$

$$t = P/6 + 2pk$$

$$\sqrt{P} \sqrt{5 - x^2 + 6x} = P/6 + 2pk \geq 0$$

$$\sqrt{5 - x^2 + 6x} = \frac{P}{6} + 2k$$

$$5 - x^2 + 6x = \frac{1}{36} + \frac{2k}{3} + 4k^2$$

$$P/6 \geq -2pk$$

$$\frac{1}{6} \geq -2k$$

$$k \geq -1/12$$

$$k \geq 0$$

$$x^2 - 6x - (5 - 1/36 - 2k/3 - 4k^2) = 0$$

$$D = 36 + 20 - 1/9 - 8k/4 - 16k^2 \geq 0$$

$$56 - 1/9 - 8k/4 - 16k^2 \geq 0$$

$$k = 0$$

$$56 - 1/9 - 0 - 0 \geq 0 \text{ - верно}$$

$$k = 1$$

$$56 - 1/9 - 2 - 16 \geq 0 \text{ - верно}$$

$$k = 2$$

$$56 - 1/9 - 4 - 64 \geq 0 \text{ - неверно}$$

$$k = 0$$

$$5 - x^2 + 6x - 1/36 = 0$$

$$x^2 - 6x - 5 + 1/36 = 0$$

$$D = 56 - 1/9 = 503/9$$

$$x_1 = (6 + \sqrt{503/3})/2$$

$$x_2 = (6 - \sqrt{503/3})/2 \text{ - не подходит}$$

$$5 - x^2 + 6x - 1/36 + 2/3 + 4 = 0$$

$$D = 56 - 1/9 - 2 - 16 = 38 - 1/9 = 341/9$$

$$x_3 = (6 + \sqrt{341/3})/2$$

$$x_4 = (6 - \sqrt{341/3})/2 \text{ - не подходит}$$

$$\text{Ответ: } (6 + \sqrt{503/3})/2 ; (6 + \sqrt{341/3})/2$$

