

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

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

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

$$\cos t = \sqrt{2}/\sqrt{8} = \sqrt{1/4} = 1/2$$

$$\sin t = \sqrt{6}/\sqrt{8} = \sqrt{3/4} = \sqrt{3}/2$$

$$t = \pi/3$$

$$\sin(\sqrt{P} \sqrt{-x^2 + 6x + 5} + \pi/3) = 1$$

$$\sqrt{P} \sqrt{-x^2 + 6x + 5} + \pi/3 = \pi/2 + 2\pi k$$

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

$$\pi/6 + 2\pi k \geq 0$$

$$1 + 12k \geq 0$$

$$12k \geq -1$$

$$k \geq -1/12$$

$$k \geq 0$$

$$P^2(-x^2 + 6x + 5) = (\pi/6 + 2\pi k)^2$$

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

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

$$D/4 = 9 + 5 - 1/36 - 4k^2 - 2k/3 = 14 - 1/36 - 4k^2 - 2k/3$$

$$14 - 1/36 = 503/36$$

$$k=0$$

$$14 - 1/36 - 4 \cdot \frac{2}{3} = (504 - 1 - 144 - 24)/36 = 335/36$$

$$k=1$$

$$14 - 1/36 - 16 - 4/3 \quad k=2 \text{ - не подходит}$$

$$D1 = 503/36$$

$$x_{1,2} = 3 \pm \sqrt{503/6}$$

$$D2 = 335/36$$

$$x_{3,4} = 3 \pm \sqrt{335/6}$$

$$x > 0$$

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

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

$$D/4 = 9 + 5 = 14$$

$$x_{1,2} = 3 \pm \sqrt{14}$$

$$x \in [3 - \sqrt{14}; 3 + \sqrt{14}]$$

$$x \in (0; +\infty)$$

$$OD3$$

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

ОТВЕТ $3 + \sqrt{503/6}; 3 + \sqrt{335/6}$.