

$$\operatorname{tg} 14x + 3 \operatorname{ctg} 14x + \sin 6x - 2\sqrt{2} \sin(3x + \pi/4) = 4 / (\sqrt{3} + 1)$$

$$(a+b)/2 \geq \sqrt{ab}$$

$$\operatorname{tg} 14x + 3 \operatorname{ctg} 14x \geq 2\sqrt{3}$$

$$\sin 6x - 2\sqrt{2} \sin(3x + \pi/4) = \sin 6x - 2\sqrt{2}(\sin 3x \cos \pi/4 + \sin \pi/4 \cos 3x) = 2\sin 3x \cos 3x - 2\sqrt{2}(\sqrt{2}/2 \sin 3x + \sqrt{2}/2 \cos 3x) = 2\sin 3x \cos 3x - 2(\sin 3x + \cos 3x)$$

$$\sin(6x) - 2\sqrt{2} \sin(3x + \pi/4) = -\cos(6x + \pi/2) - 2\sqrt{2} \sin(3x + \pi/4) = -2 + 2\sin^2(3x + \pi/4) - 2\sqrt{2} \sin(3x + \pi/4) + 1 = (\sqrt{2} \sin(3x + \pi/4) - 1)^2 - 2$$

$$\cos(6x + \pi/2) = -\sin 6x$$

$$4 / (\sqrt{3} + 1) = (4\sqrt{3} - 4) / 2 = 2\sqrt{3} - 2$$

$$\operatorname{tg} 14x + 3 \operatorname{ctg} 14x + (\sqrt{2} \sin(3x + \pi/4) - 1)^2 - 2 = 2\sqrt{3} - 2$$

$$\operatorname{tg} 14x + 3 \operatorname{ctg} 14x + (\sqrt{2} \sin(3x + \pi/4) - 1)^2 = 2\sqrt{3}$$

$$\operatorname{tg} 14x + 3 \operatorname{ctg} 14x = 2\sqrt{3} \quad (\sqrt{2} \sin(3x + \pi/4) - 1) = 0$$

$$\operatorname{tg} 14x = t \quad \sqrt{2} \sin(3x + \pi/4) = 1$$

$$t + 3/t = 2\sqrt{3}$$

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

$$D/4 = 3 - 3 = 0$$

$$t = \sqrt{3}$$

$$\operatorname{tg} 14x = \sqrt{3}$$

$$14x = \pi/3 + \pi k$$

$$x = \pi/42 + \pi k/14$$

$$(\sqrt{2} \sin(3x + \pi/4) - 1) = 0$$

$$3x + \pi/4 = \pi/4 + 2\pi h$$

$$3x = 2\pi h$$

$$x = 2\pi h/3$$

$$3x + \pi/4 = \pi - \pi/4 + 2\pi m$$

$$x = \pi/6 + 2\pi m/3$$

$$2\pi/3 h = \pi/42 + \pi k/14$$

$$2/3 h = 1/42 + k/14$$

$$28h - 3k = 1$$

$$h_0 = 1 \quad h = 1 + 3t$$

$$k_0 = 9 \quad k = 9 + 28t$$

$$2\pi/3 P(1 + 3t) = 2\pi/3 P + 2\pi t$$

$$\pi/6 + 2\pi/3 P m = \pi/42 + \pi k/14$$

$$28m - 3k = 1 - 7 = -6$$

$$28m - 3k = -6$$

$$k_0 = 30 \quad k = 30 + 28t$$

$$m_0 = 3 \quad m = 3 + 3t$$

$$\pi/6 + 2\pi/3 P(3 + 3t) = \pi/6 + 2\pi P + 2\pi t = \pi/6 + 2\pi t$$

$$\text{OTBET: } x = \pi/6 + 2\pi m/3; \pi/6 + 2\pi t$$