

$$\wedge \cos x = 1 + \tan x \Rightarrow \wedge \cos x = \frac{1}{\cos^2 x} \Rightarrow \cos x = \frac{1}{2}$$

$$x = 2k\pi \pm \frac{\pi}{3}$$

$$\frac{\pi}{3} \text{ و } \frac{5\pi}{3} \Rightarrow \text{جواب}$$

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$$\omega \sin^2 x + 2(\cos^2 x + 1) = 0$$

$$\omega \sin^2 x = 0 \Rightarrow x = k\pi \Rightarrow -\pi, 0, \pi \text{ استند آک}$$

$$2\cos^2 \frac{x}{2} = 0 \Rightarrow \frac{x}{2} = k\pi + \frac{\pi}{2} \Rightarrow x = 2k\pi + \pi \Rightarrow -\pi, -\frac{\pi}{2}, \frac{\pi}{2}, \pi$$

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$$\cos 2x = 1 - 2\sin^2 x \text{ (فرمول دوگانه)}$$

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

$$\sin x = 1 \rightarrow x = 2k\pi + \frac{\pi}{2} \rightarrow x = \frac{2k\pi}{2} + \frac{\pi}{2} \rightarrow x = \frac{\pi}{2}$$

$$k=0 \rightarrow x = \frac{\pi}{2}, k=1 \rightarrow x = \frac{5\pi}{2}, k=2 \rightarrow x = \frac{9\pi}{2}$$

$$S = \frac{\pi}{2} + \frac{5\pi}{2} + \frac{9\pi}{2} = \frac{14\pi}{2} = \frac{7\pi}{1}$$

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$$\frac{1}{\cos 2x} + \frac{1}{-\sin 2x} = 0 \Rightarrow \frac{1}{\cos 2x} = \frac{1}{\sin 2x} \Rightarrow \sin 2x = \cos 2x$$

$$\cos(\frac{\pi}{2} - 2x) \Rightarrow \tan \frac{2x}{2} = \frac{\sqrt{3}}{4}$$

$$2x = 2k\pi + \frac{\pi}{2} - 2x \Rightarrow x = \frac{k\pi}{2} \Rightarrow 0, \frac{\pi}{2}, \frac{3\pi}{2}, \frac{5\pi}{2}$$

$$2x = 2k\pi + \frac{\pi}{2} - 2x \Rightarrow k\pi + \frac{\pi}{4} \Rightarrow 0, \frac{\pi}{4}, \frac{5\pi}{4}, \frac{7\pi}{4}$$

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$$\cos(x + \frac{\pi}{6}) = \frac{\sqrt{3}}{2} \Rightarrow x + \frac{\pi}{6} = 2k\pi \pm \frac{\pi}{6} \Rightarrow x = 2k\pi - \frac{\pi}{12} \text{ یا } 2k\pi - \frac{5\pi}{12}$$

$$x = -\frac{\pi}{12} \Rightarrow m(\cos \frac{\pi}{12} - \sin \frac{\pi}{12}) - \sqrt{3} \sin(-\frac{\pi}{4}) = \sqrt{3}$$

$$m(\cos \frac{\pi}{12} - \sin \frac{\pi}{12}) = -\frac{\sqrt{3}}{2} \Rightarrow m^2(1 - \sin \frac{\pi}{4}) = \frac{\sqrt{3}}{2} \Rightarrow m = 1$$

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$$\sin\left(x + \frac{\pi}{4}\right) \cos\left(x - \frac{\pi}{4}\right) = 1 \Rightarrow \sin(\alpha) \sin(\alpha) = 1 \quad \boxed{x = 2k\pi + \frac{\pi}{4}} \leftarrow$$

~~$$\alpha = x + \frac{\pi}{4}$$~~

$$x + \frac{\pi}{4} - \frac{\pi}{4}$$

$$\alpha - \frac{\pi}{4}$$

$$\sin \alpha = 1 \Rightarrow \alpha = 2k\pi + \frac{\pi}{2} \Rightarrow x + \frac{\pi}{4} = 2k\pi + \frac{\pi}{2}$$

$$\sin \alpha = -1 \Rightarrow \alpha = 2k\pi - \frac{\pi}{2} \Rightarrow x + \frac{\pi}{4} = 2k\pi - \frac{\pi}{2}$$

$$\boxed{x = 2k\pi - \frac{\pi}{4}} \Rightarrow \frac{\pi}{4} \text{ و } \frac{5\pi}{4} \text{ جواب}$$

$$2 \sin\left(x + \frac{\pi}{3}\right) = \sqrt{2} \Rightarrow x + \frac{\pi}{3} = 2k\pi + \frac{\pi}{4} \Rightarrow x = 2k\pi - \frac{\pi}{12}$$

$$S = \frac{2k\pi}{12} + \frac{5\pi}{12} - \frac{\pi}{12} = \frac{2k\pi}{12} \rightarrow \frac{4\pi}{3}$$

$$x + \frac{\pi}{3} = 2k\pi + \frac{5\pi}{4} \Rightarrow x = 2k\pi + \frac{11\pi}{12}$$

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$$-\frac{\pi}{12} \text{ و } \frac{11\pi}{12} \text{ و } \frac{13\pi}{12} \text{ و } \frac{25\pi}{12}$$

$$-\sin x \cos x = 1 \Rightarrow -\sin 2x = 1 \Rightarrow \sin 2x = -\frac{1}{2}$$

$$2x = 2k\pi - \frac{\pi}{6} \Rightarrow x = k\pi - \frac{\pi}{12} \Rightarrow \frac{11\pi}{12} \text{ و } \frac{23\pi}{12}$$

$$2x = 2k\pi + \frac{5\pi}{6} \Rightarrow x = k\pi + \frac{5\pi}{12} \Rightarrow \frac{5\pi}{12} \text{ و } \frac{17\pi}{12}$$

$$(2 \cos^2 \alpha)(2 \cos^2 \alpha)(2 \cos^2 \alpha) = \frac{1}{8} = 8 (\cos \alpha \cos^2 \alpha \cos^2 \alpha)$$

$$\pm \frac{1}{8} = \cos \alpha \cos^2 \alpha \cos^2 \alpha \times \frac{\sin \alpha}{\sin \alpha} \Rightarrow \frac{\sin \alpha}{\sin \alpha} = \pm \frac{1}{8} \Rightarrow \sin \alpha = \pm \frac{1}{8}$$

$$\sin \alpha = \sin \alpha \Rightarrow \alpha = 2k\pi - \alpha \Rightarrow \alpha = k\pi$$

$$\alpha = 2k\pi + \pi + \alpha \Rightarrow \alpha = k\pi + \frac{\pi}{2}$$

$$\alpha = 2k\pi + \pi - \alpha \Rightarrow \alpha = k\pi + \frac{\pi}{2}$$

$$\tan 2x = \frac{1}{\tan x} = \cot x \Rightarrow \tan 2x = \tan\left(\frac{\pi}{2} - x\right)$$

$$2x = k\pi + \frac{\pi}{2} - x \Rightarrow x = \frac{k\pi}{3} + \frac{\pi}{6}$$

$$x = \frac{\pi}{6} \text{ و } \frac{5\pi}{6}$$

$$\cos\left(n + \frac{\pi}{2}\right) = \frac{\sqrt{2}}{2} (\cos n - \sin n) = \frac{\sqrt{2}}{2} \rightarrow \cos n - \sin n = \frac{1}{\sqrt{2}} \quad \text{⑤}$$

$$\cos n - \sin n = \frac{\sqrt{2}}{\sqrt{2}} \xrightarrow{\text{b.5}} \frac{\sqrt{4}}{2} \rightarrow \boxed{\cos n - \sin n = \frac{\sqrt{4}}{2}}$$

$$(\cos n - \sin n)^2 = 1 - \sin 2n = \frac{4}{9} \rightarrow \boxed{\sin 2n = \frac{1}{3}}$$

$$m(\cos n - \sin n) = 4\sqrt{4}(\sin 2n) = \sqrt{4} \rightarrow \frac{\sqrt{4}}{2} m - 4\sqrt{4}\left(\frac{1}{3}\right) = \sqrt{4}$$

$$\frac{\sqrt{4}}{2} m - \sqrt{4} = \sqrt{4} \rightarrow \frac{m\sqrt{4}}{2} = 2\sqrt{4} \rightarrow \boxed{m = 4}$$