

$$1 - \sqrt{2} \sin^2 x = \sqrt{2} \sin x - 1 \Rightarrow \sqrt{2} \sin^2 x + \sqrt{2} \sin x - 2 = 0 \Rightarrow \sin^2 x + \sin x - \sqrt{2} = 0 \Rightarrow (\sin x + \sqrt{2})(\sin x - 1) = 0$$

(الف) $\sin x = -\sqrt{2} \Rightarrow \sin x = -2 \rightarrow \emptyset$
 $\sin x = 1 \Rightarrow \sin x = \frac{1}{1} \rightarrow \emptyset$



$2k\pi + \frac{\pi}{2}$
 $2k\pi + \frac{3\pi}{2}$

$$\sqrt{2} \cos^2 x + \cos x - 1 = 0 \Rightarrow \sqrt{2} \cos^2 x + \cos x - 1 = 0 \Rightarrow (\cos x + 1)(\cos x - \frac{1}{\sqrt{2}}) = 0$$

(ب) $\cos x = -1 \Rightarrow \cos x = \frac{1}{\sqrt{2}} \rightarrow \emptyset$
 $\cos x = \frac{1}{\sqrt{2}} \Rightarrow \cos x = 1 \rightarrow \emptyset$



$(2k\pi + 2\pi)$

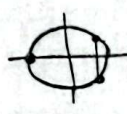
(الف) $(\sin^2 x + \cos^2 x)(\sin^2 x - \cos^2 x) = \sin^2 x \Rightarrow \cos^2 x = \sin^2 x \Rightarrow \cos x = \pm \sin x$

$\sin(\frac{\pi}{2} + 2n) \Rightarrow \sin 2n$
 $2n = 2k\pi + \frac{\pi}{2} + 2n \Rightarrow x = 2k\pi + \frac{\pi}{2}$
 $2n = 2k\pi + \pi - \frac{\pi}{2} + 2n \Rightarrow x = 2k\pi + \frac{3\pi}{2}$

(ب) $\sqrt{2} \cos^2 x - 1 = -\sqrt{2} \sin x \cos x \Rightarrow \cos^2 x = -\sin x \cos x \Rightarrow \cos x (\cos x + \sin x) = 0$
 $2n = 2k\pi + \frac{\pi}{2} + 2n \Rightarrow x = \frac{\pi}{2}$
 $2n = 2k\pi - \frac{\pi}{2} + 2n \Rightarrow x = -\frac{\pi}{2}$

$$\frac{\sqrt{2} \cos^2 x + \cos x}{\sin x} = \frac{1}{\sin x} \Rightarrow \sqrt{2} \cos^2 x + \cos x - 1 = 0 \Rightarrow \cos^2 x + \cos x - \frac{1}{\sqrt{2}} = 0 \Rightarrow (\cos x + 1)(\cos x - \frac{1}{\sqrt{2}}) = 0$$

(الف) $\cos x = -1 \Rightarrow \cos x = \frac{1}{\sqrt{2}} \rightarrow \emptyset$
 $\cos x = \frac{1}{\sqrt{2}} \Rightarrow \cos x = 1 \rightarrow \emptyset$



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

(ب) $\sqrt{2} \sin^2 x - \sin x \cos x + (1 - \sin^2 x) \sin x = \sin^2 x \Rightarrow -\cos^2 x - \sin x \cos x = 0$
 $\cos^2 x + \sin x \cos x = 0 \Rightarrow \cos x (\cos x + \sin x) = 0$
 $\cos x = 0 \Rightarrow x = \frac{\pi}{2} + k\pi$
 $\cos x + \sin x = 0 \Rightarrow \sin x = -\cos x \Rightarrow x = \frac{3\pi}{4} + k\pi$

$$\cos(\frac{\pi}{2} + n) \cos(\frac{\pi}{2} - n) = \frac{1}{2} \Rightarrow \sin(\frac{\pi}{2} - n) \cos(\frac{\pi}{2} - n) = \frac{1}{2} \Rightarrow \sin(\frac{\pi}{2} - 2n) = \frac{1}{\sqrt{2}}$$

(الف) $\sin(\frac{\pi}{2} - 2n) = \frac{1}{\sqrt{2}} \Rightarrow \sin(\frac{\pi}{2} - 2n) = \cos 2n = \frac{1}{\sqrt{2}}$
 $2n = 2k\pi \pm \frac{\pi}{4} \Rightarrow n = k\pi \pm \frac{\pi}{8}$



$$\cos(2n + \frac{\pi}{4}) = \cos(2n - \frac{\pi}{4}) \Rightarrow 2n + \frac{\pi}{4} = 2k\pi \pm (2n - \frac{\pi}{4})$$

(ب) $\cos(2n - \frac{\pi}{4}) = 2n - \frac{\pi}{4} = 2k\pi - 2n - \frac{\pi}{4} \Rightarrow n = k\pi - \frac{\pi}{4}$

$$\sin 2n = \frac{\sqrt{2} \sin n \cos n + \sin n}{\sin n} = 1 \Rightarrow \sin n (\cos n + 1) = \sin n$$

(الف) $\sin n \neq 0 \Rightarrow n \neq \frac{k\pi}{c}$
 $2n = k\pi + \frac{\pi}{4} \Rightarrow n = \frac{k\pi}{2} + \frac{\pi}{8}$

$$\tan \frac{\pi}{2} \Rightarrow \frac{1}{\tan \frac{\pi}{2}} \Rightarrow \tan \frac{\pi}{2} = 1 \Rightarrow \tan \frac{\pi}{2} = (k\pi + \frac{\pi}{2})$$

$$\tan \frac{\pi}{2} = -1 \Rightarrow (k\pi - \frac{\pi}{2})$$

$$\sin \frac{\pi}{2} = 0 \neq k\pi$$

$$\cos \frac{\pi}{2} = 0 \neq k\pi$$

$$\cos \frac{\pi}{2} \neq 1$$

$$\tan \frac{\pi}{2} \neq 0$$

$$n \Rightarrow k\pi + \pi$$

$$n \Rightarrow k\pi - \pi$$

$$\left. \begin{array}{l} \cos \frac{\pi}{2} = 0 \\ \sin \frac{\pi}{2} = 1 \end{array} \right\} \rightarrow \text{0, 0, 1}$$

مقادیر جواب ندارد

$$\cos^2 - \sin^2 \cos(\psi u) = 1$$

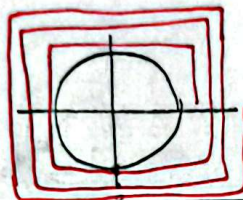
$$k \sin^2 - \sin^2 \cos(\psi u) = y \Rightarrow \sin^2 u (1 + \cos(\psi u)) = 0$$

$$\sin \pi = 0 \rightarrow \text{محل}$$

$$\cos(\psi u) = -1 \Rightarrow$$

$$u \rightarrow [0, 2\pi]$$

$$u \rightarrow [0, 4\pi]$$



$$y + y = \text{محل} \rightarrow \text{جواب}$$

$$\rightarrow \text{محل}$$

$$\tan(a-b) = \frac{\tan a \tan b}{1 + \tan a \tan b}$$

$$\tan a \Rightarrow 1 \Rightarrow \frac{\pi}{2}, \frac{3\pi}{2}$$

$$\textcircled{1} \tan(\frac{\pi}{2} - u) = \tan u \Rightarrow k\pi + u = \frac{\pi}{2} - u \Rightarrow k\pi - \frac{\pi}{2} = -2u \Rightarrow \frac{k\pi}{2} + \frac{\pi}{4} = u$$

محل اصلی

$$\textcircled{2} \tan(\frac{\pi}{2} - u) = \tan u \Rightarrow k\pi + 2u = \frac{\pi}{2} - u \Rightarrow k\pi - \frac{\pi}{2} = -3u \Rightarrow \frac{k\pi}{2} + \frac{\pi}{6} = u$$

$$1 + \sin^2 u \Rightarrow (\sin + \cos)^2 \Rightarrow 2(\cos - \sin)^2 (\cos + \sin)^2 \rightarrow \text{محل}$$

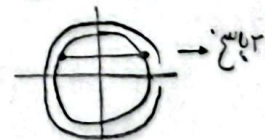
$$(\sin + \cos)^2 (1 - 2(\cos - \sin)^2) = 0$$

$$\textcircled{1} \sin = -\cos \Rightarrow \text{محل}$$

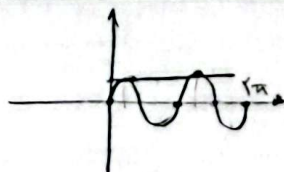
$$1 + 2 \rightarrow \text{محل}$$

$$\textcircled{2} (\cos - \sin)^2 \Rightarrow \frac{1}{2} \Rightarrow \cos^2 + \sin^2 - \sin^2 u = \frac{1}{2} \Rightarrow \sin^2 u = \frac{1}{2} \Rightarrow \sin u = \frac{1}{\sqrt{2}}$$

$$[0, 2\pi] \rightarrow \text{محل}$$



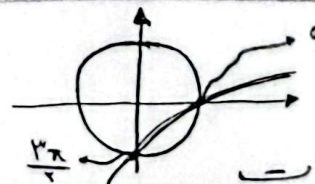
$$\cos^2 u = 1$$



$$\text{محل} \rightarrow \frac{3\pi}{2}, \frac{\pi}{2}$$

$$2k\pi + \frac{\pi}{2}, 2k\pi + \frac{3\pi}{2} \rightarrow \text{محل}$$

$$\sin^2 u - \cos^2 u = -1 \Rightarrow y = \sqrt{x^2 - 1}$$



$$[0, \frac{\pi}{2}]$$

محل