

الف) $\cos^2 x = \sin x - 1 \Rightarrow 1 - \sin^2 x = \sin x - 1 \Rightarrow \sin^2 x + \sin x - 2 = 0$

$\sin x = -\frac{1+\sqrt{9}}{2} \quad x = \arcsin x$

$\Rightarrow \sin^2 x + \sin x - 1 = 0$

$\sin x = -\frac{1+\sqrt{5}}{2}$

$\sin x = -\frac{1-\sqrt{5}}{2} \quad \text{GÜE}$

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

الف) $\sin^2 x - \cos^2 x = \sin x \Rightarrow -\cos^2 x = \sin x \Rightarrow \sin(\frac{\pi}{2} + x) = \sin x$

$2x = 2k\pi + \pi - \frac{\pi}{2} - x \quad \text{E} \quad x = 2k\pi + \frac{\pi}{2} + x$

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

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

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ب) $2 \cos^2 x + \sin x \cos x = 1 \Rightarrow 2 + 2 \tan x = \frac{1}{\cos^2 x} \Rightarrow 2 + 2 \tan x = 1 + \tan^2 x$

$x = k\pi + \alpha$

$x = k\pi + \beta$

$\Rightarrow \tan^2 x - 2 \tan x - 1 = 0 \rightarrow \tan x = \sqrt{2} + 1 = \tan \alpha$

$x = \arctan x$
 $x = \arctan \tan \beta$

$\tan x = -\sqrt{2} + 1 = \tan \beta$

الف) $\cot x (2 \cos x + 1) = \frac{1}{\sin x} \Rightarrow \frac{2 \cos^2 x + \cos x}{\sin x} = \frac{1}{\sin x} \Rightarrow 2 \cos^2 x + \cos x - 1 = 0$
 $D_f = \mathbb{R} - \{k\pi\} \quad \cos x = -1 \Rightarrow x = 2k\pi + \pi \quad \text{GÜE}$
 $\cos x = \frac{1}{2} \Rightarrow x = 2k\pi \pm \frac{\pi}{3}$

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

$\Rightarrow \cot x = 0 \Rightarrow x = k\pi + \frac{\pi}{2}$

د) $\cot x = -1 \Rightarrow x = k\pi - \frac{\pi}{4}$

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

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

$2x = 2k\pi \pm \frac{\pi}{2} \Rightarrow x = k\pi \pm \frac{\pi}{4}$
 $\Rightarrow -\frac{1}{2} \sin(2x - \frac{\pi}{2}) = \frac{1}{2}$
 $\sin(2x - \frac{\pi}{2}) = -\frac{1}{2} \Rightarrow \cos 2x = \frac{1}{2}$

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ب) $\cos(2x - \frac{\pi}{4}) = -\sin x \Rightarrow \cos(2x - \frac{\pi}{4}) = \cos(\frac{\pi}{2} + x)$

$2x - \frac{\pi}{4} = 2k\pi + \frac{\pi}{2} + x \quad 2x - \frac{\pi}{4} = 2k\pi - \frac{\pi}{2} - x \Rightarrow 3x = 2k\pi - \frac{\pi}{4} \Rightarrow x = \frac{2k\pi}{3} - \frac{\pi}{12}$
 $x = \frac{2k\pi}{3} - \frac{\pi}{12}$

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

$2x = k\pi \Rightarrow x = \frac{k\pi}{2}$

$\sin^2 x \neq 0$

$2x \neq k\pi \Rightarrow x \neq \frac{k\pi}{2}$

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

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$$\frac{\sin \frac{x}{p}}{1 + \cos \frac{x}{p}} = \frac{1}{\sin \frac{x}{p}} + \cot \frac{x}{p} \quad [-\pi, \frac{\pi}{p}]$$

$$\tan \frac{x}{\varepsilon} = \cot \frac{x}{\varepsilon} \Rightarrow \tan \frac{x}{\varepsilon} = \tan(\frac{\pi}{p} - \frac{x}{\varepsilon})$$

$$\frac{x}{\varepsilon} = k\pi + \frac{\pi}{p} - \frac{x}{\varepsilon} \Rightarrow \frac{x}{\varepsilon} = k\pi + \frac{\pi}{p} \Rightarrow x = \varepsilon k\pi + \pi$$

$$-0.5 \leq \frac{x}{\varepsilon} \leq \frac{\pi}{p} \Rightarrow -0.5 \leq k\pi + \frac{\pi}{p} \leq \frac{\pi}{p} \Rightarrow -1.5 \leq k \leq 1.5 \frac{\pi}{p}$$

$$k = -1, 0 \Rightarrow x = -\pi, \pi \quad | -\pi - \pi | = 2\pi \quad -1.5 \leq k \leq 1.5$$

$$\cos^2 x - \sin^2 x \cos^2 x = 1 \quad [0, \pi]$$

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

$$\Rightarrow \sin^2 x = 0 \Rightarrow x = k\pi \Rightarrow x = \frac{k\pi}{p} \Rightarrow x = 0, \frac{\pi}{p}, \frac{2\pi}{p}, \pi$$

$$\Rightarrow \cos^2 x = -1 \Rightarrow x = \pi k + \pi \Rightarrow x = \frac{\pi k}{p} + \pi \Rightarrow x = \frac{\pi}{p}, \pi, \frac{2\pi}{p}$$

جواب

$$\frac{1 - \tan x}{1 + \tan x} = \tan^2 x$$

$$\tan(\frac{\pi}{\varepsilon} - x) = \tan^2 x$$

$$px = k\pi + \frac{\pi}{\varepsilon} - x \Rightarrow \varepsilon x = k\pi + \frac{\pi}{\varepsilon} \Rightarrow x = \frac{k\pi}{\varepsilon} + \frac{\pi}{13}$$

$$\sqrt{1 + \sin^2 x} = \sqrt{1 - \sin^2 x} \quad [0, \pi]$$

$$\Rightarrow 1 + \sin^2 x = 1 - \sin^2 x \Rightarrow 1 + \sin^2 x = 1 - \sin^2 x \Rightarrow 2\sin^2 x + \sin^2 x - 1 = 0$$

$$\Rightarrow \sin^2 x = -1 \Rightarrow x = \pi k + \frac{\pi}{p}$$

$$\Rightarrow \sin^2 x = \frac{1}{p} \Rightarrow x = k\pi + \frac{\pi}{\varepsilon}$$

$$px = \pi k + \frac{\pi}{q} \Rightarrow x = k\pi + \frac{\pi}{14}$$

$$px = \pi k + \pi - \frac{\pi}{q} \Rightarrow x = k\pi + \frac{2\pi}{14}$$

$$\text{و) } \sin^2 x - \cos^2 x = 1 \quad [0, \pi]$$

$$x = \frac{\pi}{p}, \frac{2\pi}{p}$$

$$\text{ب) } \sin^2 x - \cos^2 x = -1$$

$$x = 0, \frac{\pi}{p}, \pi$$