

$$\cos^2 x = r \sin x - 1 \rightarrow \cos^2 x = 1 - r \sin^2 x$$

$$\rightarrow 1 - r \sin^2 x = r \sin x - 1 \rightarrow -r \sin^2 x - r \sin x + 2 = 0 \rightarrow r \sin^2 x + r \sin x - 2 = 0$$

$$\rightarrow (r \sin x - 1)(\sin x + 2) = 0 \rightarrow \sin x = \frac{1}{r} \rightarrow x = 2k\pi + \frac{\pi}{4}$$

$\frac{1}{r}$ $-r x$ $x = 2k\pi + \frac{\pi}{4}$

$$\cos^2 x + \cos x - r = 0 \rightarrow \cos^2 x = r \cos^2 x - 1 \rightarrow r \cos^2 x + \cos x - r = 0$$

$$\rightarrow (r \cos x - r)(\cos x + 1) = 0$$

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

$$\sin^2 x - \cos^2 x = \sin 2x \rightarrow (\sin^2 x - \cos^2 x)(\sin^2 x + \cos^2 x)$$

$$\sin^2 x - \cos^2 x = -\cos 2x$$

$$\sin 2x = r \sin^2 x \cos^2 x \rightarrow -\cos 2x = r \sin^2 x \cos^2 x \rightarrow \cos 2x = 0$$

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

$$-1 = \sin 2x \rightarrow x = k\pi + \frac{3\pi}{4}$$

$x = k\pi - \frac{\pi}{4}$

$$r \cos^2 x + r \sin x \cos x = 1 \rightarrow r \sin x \cos x = \sin 2x$$

$$1 + \cos 2x + \sin 2x = 1 \rightarrow \cos 2x + \sin 2x = 0 \rightarrow \sin 2x = -\cos 2x$$

$$\tan x = -1 \rightarrow r x = -\frac{\pi}{2} + k\pi \rightarrow x = \frac{k\pi}{r} - \frac{\pi}{2}$$

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

$$(r \cos x - 1)(\cos x + 1) = 0$$

$$\rightarrow -1 \rightarrow x = 2k\pi + \pi$$

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

$$r \sin^2 x - \sin x \cos x + \cos^2 x = r \rightarrow r - \cot x + \cot^2 x = r(1 + \cot^2 x)$$

$$\rightarrow r - \cot x + \cot^2 x = r + r \cot^2 x \rightarrow \cot^2 x + \cot x = 0 \rightarrow \cot x (\cot x + 1) = 0$$

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

$$\cos\left(\frac{\pi}{2} + \pi\right) \cos\left(\pi - \frac{\pi}{2}\right) = \frac{1}{r} \rightarrow \frac{1}{r} [\cos(A+B) + \cos(A-B)]$$

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$$\hookrightarrow A+B = \left(\frac{\pi}{2} + \pi\right) + \left(\pi - \frac{\pi}{2}\right) = 2\pi \rightarrow A-B = \frac{\pi}{2} + \pi - \left(\pi - \frac{\pi}{2}\right) = \frac{\pi}{r}$$

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$$\cos A \cos B = \frac{1}{r} (\cos 2\pi + \cos \frac{\pi}{r}) \rightarrow \cos \frac{\pi}{r} = 0$$

$$\frac{1}{r} \cos \frac{\pi}{r} = \frac{1}{r} \rightarrow \cos \frac{\pi}{r} = \frac{1}{r} \rightarrow r\pi = rK\pi + \frac{\pi}{r} \rightarrow \pi = K\pi + \frac{\pi}{r}$$

$$r\pi = rK\pi + \frac{\pi}{r} \rightarrow \pi = K\pi + \frac{\pi}{r}$$

$$\cos\left(r\pi - \frac{\pi}{r}\right) = -\sin r\pi \rightarrow -\sin r\pi = \cos\left(r\pi + \frac{\pi}{r}\right) \rightarrow \cos\left(r\pi - \frac{\pi}{r}\right) = \cos\left(r\pi + \frac{\pi}{r}\right)$$

$$\rightarrow r\pi - \frac{\pi}{r} = \left(r\pi + \frac{\pi}{r}\right) + rK\pi \rightarrow rK\pi = r\pi - \frac{\pi}{r} - r\pi - \frac{\pi}{r} + rK\pi$$

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$$\rightarrow r\pi = -\frac{\pi}{r} + \frac{\pi}{r} + rK\pi \rightarrow \pi = -\frac{\pi}{r} + rK\pi \rightarrow \pi = -\frac{\pi}{r} + \frac{K\pi}{r}$$

$$\frac{\sin 2\pi + \sin r\pi}{\sin r\pi} = 1 \quad \sin 2\pi + \sin r\pi = \sin r\pi \rightarrow \sin(r\pi) + \sin(\pi) = r \sin(r\pi) \cos(\pi)$$

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$$r \sin(r\pi) \cos(\pi) = \sin(r\pi) \rightarrow \sin r\pi = 0 \rightarrow r\pi = K\pi \rightarrow \pi = \frac{K\pi}{r}$$

$$\rightarrow r \cos(\pi) = 1 \rightarrow \cos(\pi) = \frac{1}{r} \rightarrow \pi = \pm \frac{\pi}{r} + rK\pi$$

$$\tan \frac{\pi}{r} = \cot \frac{\pi}{r} + \cot \frac{\pi}{r} \rightarrow \tan \frac{\pi}{r} = \cot \frac{\pi}{r} \rightarrow \tan\left(\frac{\pi}{r}\right) = 1 \rightarrow \pi = \pi + rK\pi$$

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$$|\pi - (-\pi)| = r\pi$$

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$$\tan\left(\frac{\pi}{2} - \pi\right) = \frac{1 - \tan \pi}{1 + \tan \pi} \rightarrow \frac{\pi}{2} - \pi = r\pi + K\pi \rightarrow \pi = \frac{\pi}{2} + K\pi \rightarrow \pi = \frac{K\pi}{2} + \frac{\pi}{4}$$

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$$\sqrt{1 + \sin^2 x} = \sqrt{r} \cos^2 x \rightarrow 1 + \sin^2 x = r \cos^2 x = 1 + \cos^2 x$$

$$\sin^2 x = \cos^2 x = \sin\left(\frac{\pi}{2} - x\right) \rightarrow rx = \frac{\pi}{2} - x + rka \rightarrow 4x = \frac{\pi}{2} + rka$$

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$$\rightarrow x = \frac{ka}{4} + \frac{\pi}{4}$$

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

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$$-\cos^2 x = 1 \rightarrow \cos^2 x = -1 \rightarrow rx = rka + \pi \rightarrow x = ka + \frac{\pi}{r} \sim x = \frac{\pi}{r}, \frac{3\pi}{r} \text{ (و)}$$

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

$$\sin x = 0 \quad \cos x = 1 \quad \checkmark$$

$$\cos x = 0 \quad \sin x = -1$$

$$x = 0$$

$$x = \frac{\pi}{r}$$

$$x = r\pi$$

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