

$$\sin x = \sin\left(\frac{-p}{4}\right) \quad \square \square \square \quad \sin x = \frac{-\sqrt{2}}{2} : \square \square \square \quad 2 \sin x + \sqrt{2} = 0 \quad \square \square \square \square$$

$$x = p - \left(\frac{-p}{4}\right) + 2kp / k \in \mathbb{Z} \quad \square \square \quad x = \frac{-p}{4} + 2kp / k \in \mathbb{Z} : \square \square \square$$

$$S = \left\{ \frac{-p}{4} + 2kp / k \in \mathbb{Z} \right\} \cup \left\{ \frac{5p}{4} + 2kp / k \in \mathbb{Z} \right\} : \square \square \square \square \square$$

$$\cos x = \cos\left(\frac{2p}{3}\right) : \square \square \square \quad \cos x = \frac{-1}{2} : \square \square \square \quad 2 \cos x + 1 = 0 \quad \square \square \square \square$$

$$x = \frac{-2p}{3} + 2kp / k \in \mathbb{Z} \quad \square \square \quad x = \frac{2p}{3} + 2kp / k \in \mathbb{Z} : \square \square \square$$

$$S = \left\{ \frac{2p}{3} + 2kp / k \in \mathbb{Z} \right\} \cup \left\{ \frac{-2p}{3} + 2kp / k \in \mathbb{Z} \right\} : \square \square \square \square \square$$

$$\cos\left(2x - \frac{p}{3}\right) = \cos\left(\frac{p}{4}\right) : \square \square \square \quad \cos\left(2x - \frac{p}{3}\right) = \frac{\sqrt{2}}{2} \quad \square \square \square \square$$

$$2x - \frac{p}{3} = \frac{-p}{4} + 2kp / k \in \mathbb{Z} \quad \square \square \quad 2x - \frac{p}{3} = \frac{p}{4} + 2kp / k \in \mathbb{Z} : \square \square \square$$

$$2x = \frac{-p}{4} + \frac{p}{3} + 2kp / k \in \mathbb{Z} \quad \square \square \quad 2x = \frac{p}{4} + \frac{p}{3} + 2kp / k \in \mathbb{Z} : \square \square \square$$

$$2x = \frac{p}{12} + 2kp / k \in \mathbb{Z} \quad \square \square \quad 2x = \frac{7p}{12} + 2kp / k \in \mathbb{Z} : \square \square \square$$

$$x = \frac{p}{24} + kp / k \in \mathbb{Z} \quad \square \square \quad x = \frac{7p}{24} + kp / k \in \mathbb{Z} : \square \square \square$$

$$S = \left\{ \frac{p}{24} + kp / k \in \mathbb{Z} \right\} \cup \left\{ \frac{7p}{24} + kp / k \in \mathbb{Z} \right\} : \square \square \square \square \square$$

$$\sin\left(3x - \frac{2p}{3}\right) = \frac{\sqrt{3}}{2} = \sin\left(\frac{p}{3}\right) : \square \square \square \quad 2 \sin\left(3x - \frac{2p}{3}\right) = \sqrt{3} \quad \square \square \square \square$$

$$3x - \frac{2p}{3} = p - \frac{p}{3} + 2kp / k \in \mathbb{Z} \quad \square \square \quad 3x - \frac{2p}{3} = \frac{p}{3} + 2kp / k \in \mathbb{Z} : \square \square \square$$

$$3x = \frac{2p}{3} + \frac{2p}{3} + 2kp / k \in \mathbb{Z} \quad \square \square \quad 3x = \frac{p}{3} + \frac{2p}{3} + 2kp / k \in \mathbb{Z} : \square \square \square$$

$$3x = \frac{4p}{3} + 2kp / k \in \mathbb{Z} \quad \square \square \quad 3x = p + 2kp / k \in \mathbb{Z} : \square \square \square$$

$$x = \frac{4p}{9} + \frac{2kp}{3} / k \in \mathbb{Z} \quad \square \square \quad x = \frac{p}{3} + \frac{2kp}{3} / k \in \mathbb{Z} : \square \square \square$$

$$S = \left\{ \frac{p}{3} + \frac{2kp}{3} / k \in \mathbb{Z} \right\} \cup \left\{ \frac{4p}{9} + \frac{2kp}{3} / k \in \mathbb{Z} \right\} : \square \square \square \square \square$$

$$a = p - b + 2kp / k \in \mathbb{Z} \quad \square \square \quad a = b + 2kp / k \in \mathbb{Z} : \square \square \square \quad \sin(a) = \sin(b) : \square \square \square \square \square \square \square : \square$$

$$a = -b + 2kp / k \in \mathbb{Z} \quad \square \square \quad a = b + 2kp / k \in \mathbb{Z} : \square \square \square \quad \cos(a) = \cos(b) \quad \square$$

$$\sin\left(5x - \frac{p}{3}\right) = \sin\left(x + \frac{p}{3}\right) : \square \square \square \square$$

$$5x - \frac{p}{3} = p - \left(x + \frac{p}{3}\right) + 2kp / k \in \mathbb{Z} \quad \square \square \quad 5x - \frac{p}{3} = x + \frac{p}{3} + 2kp / k \in \mathbb{Z} \quad \square \square \square$$

$$5x - \frac{p}{3} = p - x - \frac{p}{3} + 2kp / k \in \mathbb{Z} \quad \square \square \quad 5x - x = \frac{p}{3} + \frac{p}{3} + 2kp / k \in \mathbb{Z} \quad \square \square \square$$

$$6x = p + 2kp / k \in \mathbb{Z} \quad \square \square \quad 4x = \frac{2p}{3} + 2kp / k \in \mathbb{Z} \quad \square \square \square$$

$$x = \frac{p}{6} + \frac{kp}{3} / k \in \mathbb{Z} \quad \square \square \quad x = \frac{p}{6} + \frac{kp}{2} / k \in \mathbb{Z} \quad \square \square \square$$

$$S = \left\{ \frac{p}{6} + \frac{kp}{2} / k \in \mathbb{Z} \right\} \cup \left\{ \frac{p}{6} + \frac{kp}{3} / k \in \mathbb{Z} \right\} : \square \square \square \square$$

$$\cos\left(\frac{p}{2} - x\right) = \cos x : \square \square \square \quad \sin x = \cos x : \square \square \square \square$$

$$\frac{p}{2} - x = -x + 2kp / k \in \mathbb{Z} \quad \square \square \quad \frac{p}{2} - x = x + 2kp / k \in \mathbb{Z} \quad \square \square \square$$

$$\frac{p}{2} = 2kp / k \in \mathbb{Z} \quad \square \square \quad -2x = \frac{-p}{2} + 2kp / k \in \mathbb{Z} \quad \square \square \square$$

$$\left(\frac{1}{2} = 0,5 \quad \square \quad \text{متساوية غير ممكنة لأن } 2k \text{ عدد صحيح} \quad \square \quad \frac{1}{2} = 2k / k \in \mathbb{Z} \quad \square \square \quad x = \frac{p}{4} - kp / k \in \mathbb{Z} \quad \square \square \square\right)$$

$$S = \left\{ \frac{p}{4} - kp / k \in \mathbb{Z} \right\} : \square \square \square \square$$

$$\cos(3x) = 0 \quad \square \square \quad \sin x - 1 = 0 : \square \square \square \quad \cos(3x) \cdot (\sin x - 1) = 0 : \square \square \square \square$$

$$(استعملنا الدائرة المثلثية) \quad 3x = 2kp / k \in \mathbb{Z} \quad \square \square \quad x = \frac{p}{2} + 2kp / k \in \mathbb{Z} : \square \square \square \quad \cos(3x) = 0 \quad \square \square \quad \sin x = 1 : \square \square \square$$

$$x = \frac{2kp}{3} / k \in \mathbb{Z} \quad \square \square \quad x = \frac{p}{2} + 2kp / k \in \mathbb{Z} : \square \square \square$$

$$S = \left\{ \frac{p}{2} + 2kp / k \in \mathbb{Z} \right\} \cup \left\{ \frac{2kp}{3} / k \in \mathbb{Z} \right\} : \square \square \square \square$$

$$\sin x \left(2 + \frac{1}{\cos x} \right) = 0 : \square \square \square \quad 2 \sin x + \frac{\sin x}{\cos x} = 0 : \square \square \square \quad 2 \sin x + \tan x = 0 : \square \square \square \square$$

$$\frac{1}{\cos x} = -2 \quad \square \quad \sin x = 0 : \square \square \square \quad 2 + \frac{1}{\cos x} = 0 \quad \square \quad \sin x = 0 : \square \square \square$$

$$\cos x = \cos \left(\frac{2p}{3} \right) \quad \square \quad \sin x = 0 : \square \square \square \quad \cos x = \frac{-1}{2} \quad \square \quad \sin x = 0 : \square \square \square$$

$$x = -\frac{2p}{3} + 2kp / k \in Z \quad \square \quad x = \frac{2p}{3} + 2kp / k \in Z \quad \square \quad x = kp / k \in Z \quad \square \square \square$$

$$S = \{kp / k \in Z\} \cup \left\{ \frac{2p}{3} + 2kp / k \in Z \right\} \cup \left\{ -\frac{2p}{3} + 2kp / k \in Z \right\} : \square \square \square \square \square$$

$$\cos \left(\frac{p}{2} - x \right) = \cos x : \square \square \square \quad \sin x = \cos x : \square \square \square \square$$

$$\frac{p}{2} - x = -x + 2kp / k \in Z \quad \square \quad \frac{p}{2} - x = x + 2kp / k \in Z \quad \square \square \square$$

$$\frac{p}{2} = 2kp / k \in Z \quad \square \quad -2x = \frac{-p}{2} + 2kp / k \in Z \quad \square \square \square$$

$$\left(\frac{1}{2} = 0,5 \text{ عدد صحيح و } 2k \text{ متساوية غير ممكنة لأن } \frac{1}{2} = 2k / k \in Z \right) \quad \square \quad x = \frac{p}{4} - kp / k \in Z \quad \square \square \square$$

$$S = \left\{ \frac{p}{4} - kp / k \in Z \right\} : \square \square \square \square \square$$

$$\cos \left(\frac{p}{2} - \left(x + \frac{p}{6} \right) \right) = \cos \left(2x + \frac{p}{3} \right) : \square \square \square \quad \sin \left(x + \frac{p}{6} \right) = \cos \left(2x + \frac{p}{3} \right) : \square \square \square \square$$

$$\cos \left(\frac{p}{3} - x \right) = \cos \left(2x + \frac{p}{3} \right) : \square \square \square \quad \cos \left(\frac{p}{2} - x - \frac{p}{6} \right) = \cos \left(2x + \frac{p}{3} \right) : \square \square \square$$

$$\frac{p}{3} - x = -\left(2x + \frac{p}{3} \right) + 2kp / k \in Z \quad \square \quad \frac{p}{3} - x = 2x + \frac{p}{3} + 2kp / k \in Z : \square \square \square$$

$$\frac{p}{3} - x = -2x - \frac{p}{3} + 2kp / k \in Z \quad \square \quad -3x = 2kp / k \in Z : \square \square \square$$

$$x = -\frac{2p}{3} + 2kp / k \in Z \quad \square \quad x = \frac{-2kp}{3} / k \in Z : \square \square \square$$

$$S = \left\{ \frac{-2kp}{3} / k \in Z \right\} \cup \left\{ -\frac{2p}{3} + 2kp / k \in Z \right\} : \square \square \square \square \square$$

نطبق القواعد السابقة حتى وإن كانت التعابير (داخل النسب المثلثية) مركبة. □

$$\sin x + 2 = 0 \quad \square \quad \sin x - 2 = 0 \quad : \square \square \square \quad (\sin x - 2)(\sin x + 2) = 0 \quad : \square \square \square \quad \sin^2 x - 4 = 0 \quad : \square \square \square \square$$

$$\sin x = -2 \quad \square \quad \sin x = 2 \quad : \square \square \square \quad \text{و هذا غير ممكن في الحالتين لأننا نعلم أن: } -1 \leq \sin x \leq 1$$

$$S = f \quad : \square \square \square \square \square$$

$$(\sqrt{3} \tan x - 1)(\sqrt{3} \tan x + 1) = 0 \quad : \square \square \square \quad 3 \tan^2(x) - 1 = 0 \quad : \square \square \square \square$$

$$\tan x = \frac{-\sqrt{3}}{3} \quad \square \quad \tan x = \frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3} \quad \square \square \square$$

$$x = -\frac{p}{6} + kp / k \in Z \quad \square \quad x = \frac{p}{6} + kp / k \in Z \quad : \square \square \square \quad \tan x = \tan\left(-\frac{p}{6}\right) \quad \square \quad \tan x = \tan\left(\frac{p}{6}\right) \quad \square \square \square$$

$$S = \left\{ \frac{p}{6} + kp / k \in Z \right\} \cup \left\{ -\frac{p}{6} + kp / k \in Z \right\} \quad : \square \square \square \square \square$$

$$(\sqrt{2} \cos x - 1)(\sqrt{2} \cos x + 1) = 0 \quad : \square \square \square \quad 4 \cos^2 x - 1 = 0 \quad : \square \square \square \square$$

$$\cos x = \cos\left(\frac{3p}{4}\right) \quad \square \quad \cos x = \cos\left(\frac{p}{4}\right) \quad : \square \square \square \quad \cos x = \frac{-\sqrt{2}}{2} \quad \square \quad \cos x = \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2} \quad : \square \square \square$$

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$$x = -\frac{3p}{4} + 2kp / k \in Z \quad \square \quad x = \frac{3p}{4} + 2kp / k \in Z \quad \square \quad x = -\frac{p}{4} + 2kp / k \in Z \quad \square \quad x = \frac{p}{4} + 2kp / k \in Z$$

$$S = \left\{ \frac{p}{4} + 2kp / k \in Z \right\} \cup \left\{ -\frac{p}{4} + 2kp / k \in Z \right\} \cup \left\{ \frac{3p}{4} + 2kp / k \in Z \right\} \cup \left\{ -\frac{3p}{4} + 2kp / k \in Z \right\} \quad : \square \square \square \square \square$$