

~~5.5 Sum & Difference Properties Day 3~~

~~Essential Question:~~

How do I find general solutions for composite argument equations?

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I. Solve for...

A. the general solution

B. values for $0 \leq x \leq 2\pi$ or $0^\circ \leq \theta \leq 360^\circ$

$$\cos x \cos \frac{\pi}{4} - \sin x \sin \frac{\pi}{4} = \frac{1}{2}$$

$$\cos^{-1} \left(\cos \left(x + \frac{\pi}{4} \right) \right) = \left(\frac{1}{2} \right)$$

S(A)
T(C)

$$\cos^{-1} \left(\frac{1}{2} \right) = x + \frac{\pi}{4}$$

QI.

$$\frac{\pi}{3} + 2\pi n = x + \frac{\pi}{4}$$

① $\boxed{\frac{\pi}{12} + 2\pi n = x}$

B. $0 \leq x \leq \frac{24\pi}{12}$

$$2\pi = \frac{24\pi}{12}$$

$\boxed{\frac{\pi}{12}, \frac{17\pi}{12}}$

$$\frac{\pi}{12} + 2\pi n$$

QIV.

$$-\frac{\pi}{3} + 2\pi n = x + \frac{\pi}{4}$$

② $\boxed{-\frac{7\pi}{12} + 2\pi n = x}$

General
SOLUTION

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Essential Question: How do I find general solutions for composite argument equations?

2. Solve for...

- A. the general solution
- B. values for $0 \leq x \leq 2\pi$ or $0^\circ \leq \theta \leq 360^\circ$

$$A=2x \quad B=x$$

$$\frac{\tan 2x - \tan x}{1 + \tan 2x \tan x} = \frac{-\sqrt{3}}{3}$$

$$\tan(2x-x) = -\frac{\sqrt{3}}{3}$$

$$\tan x = -\frac{\sqrt{3}}{3}$$

$$x = \tan^{-1}\left(-\frac{\sqrt{3}}{3}\right)$$

~~SIA~~
 ~~TIC~~
 $+ \pi n$

QIII

$x/\sqrt{3}$

B. $0 \leq x \leq \frac{12\pi}{6}$

$-\frac{\pi}{6}, \frac{5\pi}{6}, \frac{11\pi}{6}$

General solution!!

$$-\frac{\pi}{6} + \pi n = x$$

