Name _____ Date _____

Trigonometric Equations - Guided Lesson Explanation:

Explanation#1

Step 1) $4(\cos x+1) = 2$

$4 \cos x + 4 = 2$

$4 \cos x = 2 - 4$

$4 \cos x = -2$

$\cos x = \frac{-2}{4}$

$\cos x = \frac{-1}{2}$

Step 2) Cos is negative and as a result found in Quadrant II and Quadrant III.

A cos value of -1/2 is a reference angle of 60º.

This is considered the reference angle of 60º quadrants II and III.

x = 120º and 240° or 2π/3 and 4π/3

So, the answer is 120º and 240°.

Explanation#2

Step 1) $16 \sin x - 4 = 0$

$16 \sin x = 4$

$\sin x = \frac{4}{16}$

$\sin x = \frac{1}{4}$

Step 2) Now, Sine is positive in Quadrant I and Quadrant II.

Also, a sine value of 1/4 is a reference angle of 45º.

This is considered the reference angle of 45º quadrants I and II.

x = 45º and 135° or π/4 and 3π/4

So, the answer is 45º and 135°.

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Explanation # 3

Step 1) 2 tan x - 2 = 0

2 tan x = 2

tan x = $\frac{2}{2}$

tan x = 1

Step 2) Now, tan is positive in the Quadrant I and Quadrant III.

A tan value of 1 is a reference angle of 45º.

This is considered the reference angle of 45º quadrants I and III.

x = 45º and 225° or π/4 and 5π/4

So, the answer is 45º and 225°.