

TRIG 2.3 ~ Solving Trigonometric Equations

You will learn techniques for solving equations involving trigonometric functions.

Review of inverse functions:

$$\sin^{-1}(1/2) = x$$

$$\sin^{-1}(-1/2) = x$$

$$\sin x = 1/2$$

$$\sin x = -1/2$$

$$\sin x = 1/2, \quad 0 \leq x < 2\pi$$

$$\sin x = -1/2, \quad 0 \leq x < 2\pi$$

$$\tan^{-1}(1) =$$

$$\tan^{-1}(-1) =$$

Solving a trigonometric equation

Use algebra combined with the inverse trig functions.

a) $3\cot^2 x - 1 = 0$

b) $2 \sin 2x = -\sqrt{3}$

c) $\sec(x/2) = -2$

Some algebra may be required.
You may need to multiply or factor...

a) Solve for x on the interval $[0, 2\pi)$
 $\sin x \cos x - \cos x = 0$

You may need to put the expression in terms of the same function
using the identities.

b) Solve for x on the interval $[0, 2\pi)$
 $\sin x + 2 \cos^2 x - 2 = 0$

Using inverse trig functions to state a solution.

State the solutions to this equation:

$$\sec^2 x - 2\tan x = 4$$