

13-7 Inverse Trig Functions

Objective:

Solve equations by using inverse trig functions.

Find the values of expressions involving trip functions.

Trig Functions and Their Inverses

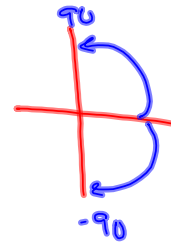
A) Graph $y = \sin x$

B) Discuss inverse and why we limit the domain.

Inverse sin, cos, and tan

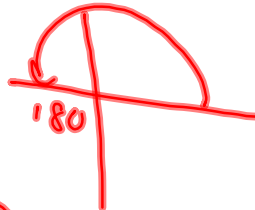
$$y = \text{Sin}^{-1} x \text{ or } y = \arcsin x$$

$$-90 \leq y \leq 90$$



$$y = \text{Cos}^{-1} x \text{ or } y = \arccos x$$

$$0 \leq y \leq 180$$



$$y = \text{Tan}^{-1} \text{ or } y = \arctan x$$

$$-90 < y < 90$$



Write each equation in the form of an inverse.

Ex 1) $\sin 30 = (1/2)$

$$\sin^{-1}\left(\frac{1}{2}\right) = 30^\circ$$

Ex 2) $\cos a = b$

$$\cos^{-1}(b) = a$$

Solve each equation by finding x to the nearest degree.

Ex 3) $\sin x = \frac{\sqrt{3}}{2}$

$$\sin^{-1}\left(\frac{\sqrt{3}}{2}\right) = x = 60^\circ$$

Ex 4) $x = \text{Arctan } 1$

$$\underline{\text{OR}} \tan^{-1}(1) = x = 45^\circ$$

Find each value. Write angle measures in radians. Round to the nearest hundredth.

Ex 5) $\cos^{-1}(-.5) =$

$$2.09$$

Ex 6) $\sin(\sin^{-1}.5) =$

$$.5$$

Ex 7) $\sin(2\text{Arcsin}.5) =$

$$.87$$