

MATH 9 - Worksheet
Inverse Trig Functions
Answers Below

(1) Find each of the following:

(a) $\sin^{-1}(0) =$ _____

(b) $\cos^{-1} 0 =$ _____

(c) $\cos^{-1}(-\sqrt{3}/2) =$ _____

(d) $\tan^{-1}(\sqrt{3}) =$ _____

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

(f) $\sin^{-1}(2) =$ _____

(g) $\sin^{-1}\left(\frac{-\sqrt{2}}{2}\right) =$ _____

(h) $\cos^{-1}(-1/2) =$ _____

(2) Evaluate each of the following exactly:

(a) $\sin(\tan^{-1}(4/3) - \cos^{-1}(1/3)) =$ _

(b) $\sin(2\cos^{-1}(-4/5)) =$ _____

(3) Given the following information about the angle β , determine which quadrant or quadrants the terminal side of β could be in.

(a) $\beta = \sin^{-1}(-1/5)$ _____ (b) $\beta = \cos^{-1}x$; $x < 0$ _____ (c) $\tan \beta = 2/7$ _____

(4) How many solutions does each of the following equations have? (Don't solve)

(a) $\beta = \cos^{-1}(5/6)$ _____ (b) $\sin x = 2/3$, $0 < x < 2\pi$ _____

(5) (a) Find all (exact) solutions in $[0, 2\pi]$: $\tan \beta = 2/3$

(b) Find all (exact) solutions in $[0, 2\pi]$: $\sin^2 \beta = 1/3$

(c) Find all (exact) solutions in $[0, 2\pi]$: $10 \cos^2 \theta - 13 \cos \theta - 3 = 0$.

ANSWERS: 1) a) 0 b) $\pi/2$ c) $5\pi/6$ d) $\pi/3$ e) $-\pi/4$ f) undefined g) $-\pi/4$ h) $2\pi/3$

2) $\frac{4-6\sqrt{2}}{15}$ 3) 4, 2, 1 4) 1, 2

5) a) $\beta = \tan^{-1}(2/3), \tan^{-1}(2/3) + \pi$ b) $\beta = \sin^{-1}(1/\sqrt{3}), \pi - \sin^{-1}(1/\sqrt{3}), \pi + \sin^{-1}(1/\sqrt{3}), 2\pi - \sin^{-1}(1/\sqrt{3})$

c) $\theta = \pi + \cos^{-1}(1/5), \pi - \cos^{-1}(1/5)$

