

Section 4.7

Inverse Function	Domain	Range	Inverse Properties
$y = \arcsin x$ if and only if $\sin y = x$	$-1 \leq x \leq 1$	$-\frac{\pi}{2} \leq y \leq \frac{\pi}{2}$	$\sin(\arcsin x) = x$ and $\arcsin(\sin y) = y$
$y = \arccos x$ if and only if $\cos y = x$	$-1 \leq x \leq 1$	$0 \leq y \leq \pi$	$\cos(\arccos x) = x$ and $\arccos(\cos y) = y$
$y = \arctan x$ if and only if $\tan y = x$	$-\infty < x < \infty$	$-\frac{\pi}{2} < y < \frac{\pi}{2}$	$\sin(\arctan x) = x$ and $\arctan(\tan y) = y$

Problem 1. Sketch the graph of the function.

a) $y = \arcsin x$

b) $y = \arccos x$

c) $y = \arctan x$

Problem 2. Evaluate the expression without using a calculator.

a) $\arccos 0$

b) $\arccos 1$

c) $\arccos\left(-\frac{\sqrt{3}}{2}\right)$

d) $\arcsin\left(\frac{\sqrt{2}}{2}\right)$

e) $\arcsin(-1)$

f) $\arcsin\left(\frac{1}{2}\right)$

g) $\arcsin\left(\frac{\sqrt{3}}{2}\right)$

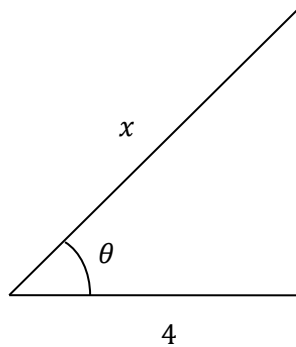
h) $\arctan(-\sqrt{3})$

i) $\arctan(-1)$

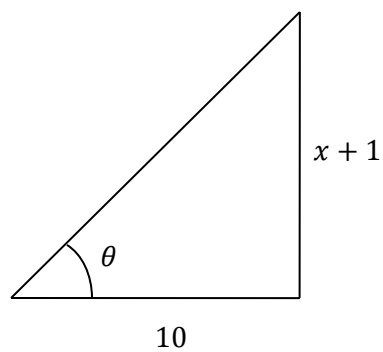
j) $\arctan\left(\frac{\sqrt{3}}{3}\right)$

Problem 3. Use a trigonometric function to write θ as a function of x .

a)



b)



Problem 4. Find the exact value of the expression. Sketch a right triangle.

a) $\sec\left(\arcsin\frac{3}{5}\right)$

b) $\tan\left(\arccos\frac{\sqrt{3}}{4}\right)$

Problem 5. Write an algebraic expression that is equivalent to the expression. Sketch a right triangle.

a) $\cos(\arctan x)$

b) $\sec\left(\operatorname{arccot}\frac{1}{x}\right)$