

Calculus AB

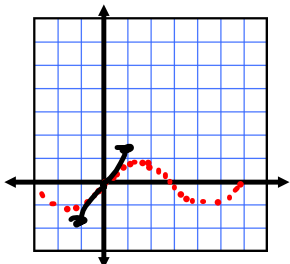
5-6

Inverse Trigonometric Functions

$$f(x) = \arcsin x \quad \text{or} \quad f(x) = \sin^{-1} x$$

domain: $[-1, 1]$

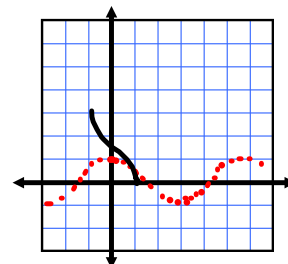
range: $[-\frac{\pi}{2}, \frac{\pi}{2}]$
III, I



$$f(x) = \arccos x \quad \text{or} \quad f(x) = \cos^{-1} x$$

domain: $[-1, 1]$

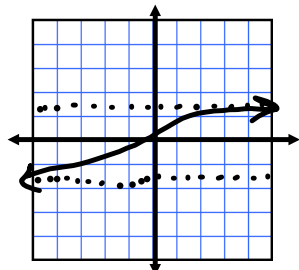
range: $[0, \pi]$
I+II



$$f(x) = \arctan x \quad \text{or} \quad f(x) = \tan^{-1} x$$

domain: \mathbb{R}

range: $(-\frac{\pi}{2}, \frac{\pi}{2})$



Evaluate each expression without using a calculator. (pg 379)

*) $\arcsin \frac{\sqrt{3}}{2} = \frac{\pi}{3}$

$\sin(\text{angle}) = \text{ratio} \quad \frac{\text{opp}}{\text{hyp}}$
 $\sin^{-1}(\frac{\text{opp}}{\text{hyp}}) = \text{angle}$

Evaluate the expression without using a calculator.

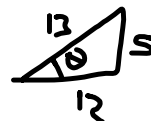
18a) $\tan \left[\arccos \left(-\frac{1}{\sqrt{2}} \right) \right]$

$\tan \left(\frac{3\pi}{4} \right)$

-1

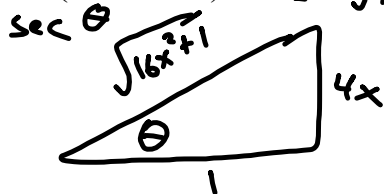


18b) $\cos \left[\arcsin \left(\frac{5}{13} \right) \right] = \frac{12}{13}$



Write the expression in algebraic form.

28) $\sec(\arctan 4x) = \sqrt{16x^2 + 1}$



Assignment:
Pg. 379
5-33 odd

Calculus AB

5-6

Inverse Trigonometric Functions: Differentiation

Find the derivative of each. (pg 379)

45) $g(x) = 3\arccos \frac{x}{2}$

49) $g(x) = \frac{\arcsin 3x}{x}$

Function	Derivative
$f(x) = \arcsin(x)$	$\frac{u'}{\sqrt{1-u^2}}$
$f(x) = \arccos(x)$	$\frac{-u'}{\sqrt{1-u^2}}$
$f(x) = \arctan(x)$	$\frac{u'}{1+u^2}$
$f(x) = \operatorname{arccsc}(x)$	$\frac{-u'}{ u \sqrt{u^2-1}}$
$f(x) = \operatorname{arcsec}(x)$	$\frac{u'}{ u \sqrt{u^2-1}}$
$f(x) = \operatorname{arccot}(x)$	$\frac{-u'}{1+u^2}$

Assignment:

Pg. 379
43 - 63 odd
97