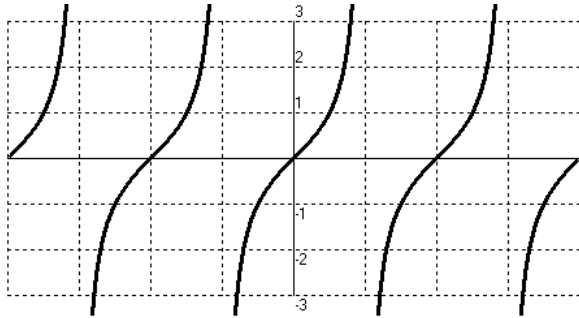


Pre-Calculus Notes

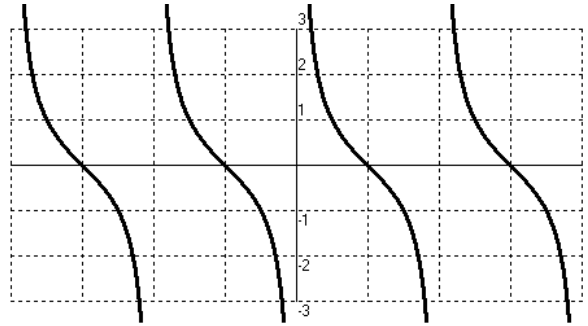
Name: \_\_\_\_\_

Inverse Tangent, Cotangent, Cosecant, and Secant Functions

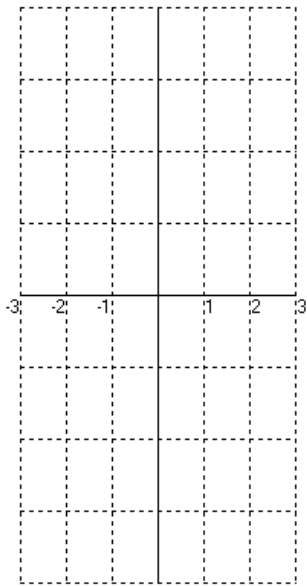
$y = \tan x$



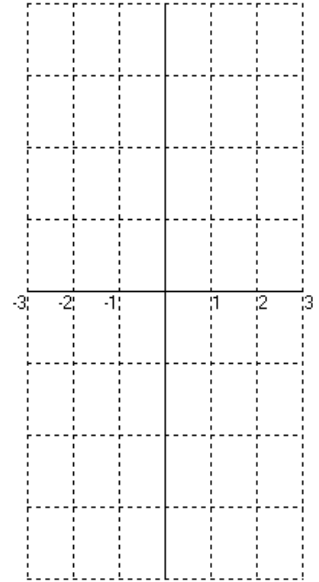
$y = \cot x$



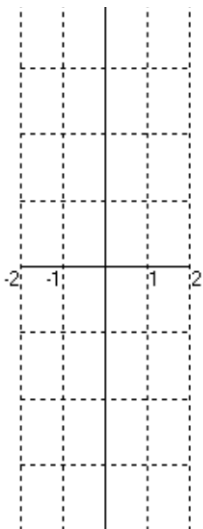
$y = \tan^{-1} x$



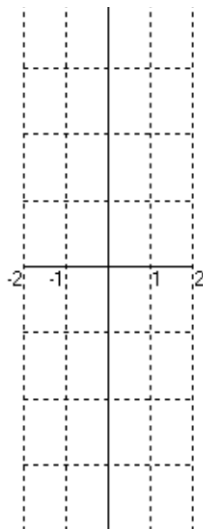
$y = \cot^{-1} x$



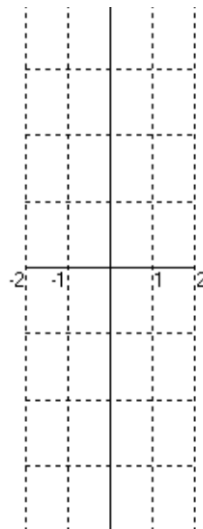
$y = \text{Sin}^{-1} x$



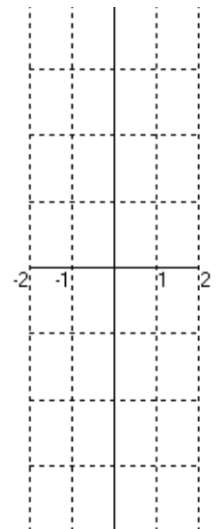
$y = \text{Csc}^{-1} x$



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



$y = \text{Sec}^{-1} x$



Example 1: Use the definition of each inverse trigonometric function to determine the EXACT VALUE.

a. $\text{Arctan } 1$	b. $\text{Csc}^{-1}\left(\frac{2\sqrt{3}}{3}\right)$
c. $\text{Tan}^{-1}\left(\frac{\sqrt{3}}{3}\right)$	d. $\text{Arcsec}(-\sqrt{2})$
e. $\text{Cot}^{-1}(-1)$	f. $\text{Arccsc}(-2)$

Example 2: Evaluate to four decimal places.

a. $\text{Sec}^{-1}(2.71)$	b. $\text{Arccot}(-5.1)$	c. $\text{Tan}^{-1}(-0.5678)$
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Example 3: Evaluate to the nearest tenth of a degree.

a. $\text{Csc}^{-1}(1.042)$	b. $\text{Arctan}(1.521)$	c. $\text{Arc cot}(2.6578)$
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Example 4: Determine the EXACT VALUE of each expression.

a. $\csc(\tan^{-1}(-1))$	b. $\operatorname{Arcsec}\left(\sec\left(-\frac{\pi}{4}\right)\right)$
c. $\operatorname{Arccot}(\cos \pi)$	d. $\cos(\operatorname{Csc}^{-1}(-2))$
e. $\tan\left(\operatorname{Arccsc}\left(\frac{2\sqrt{3}}{3}\right)\right)$	f. $\operatorname{Arcsec}\left(\csc\left(\frac{5\pi}{3}\right)\right)$

Example 5: Draw a reference triangle to help you find each of the following.

a. $\tan\left(\sin^{-1}\frac{5}{13}\right)$	b. $\csc\left(\cos^{-1}\left(-\frac{3}{5}\right)\right)$
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