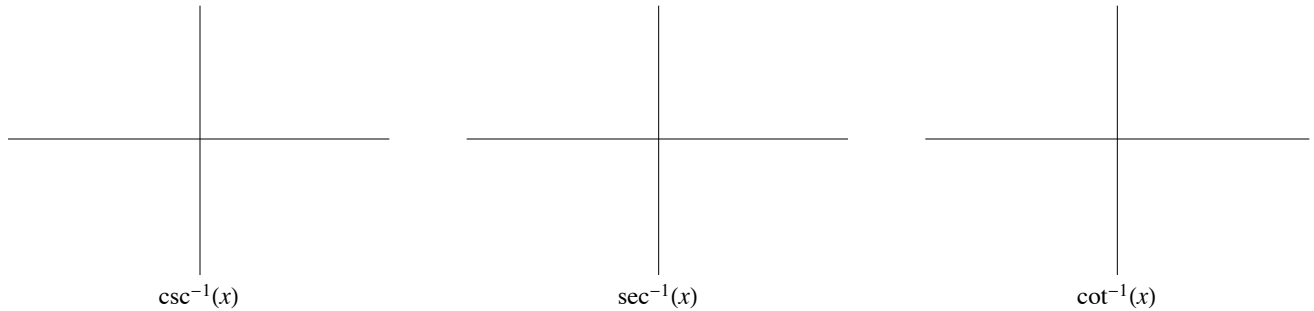


7.4b More with Inverse Functions

Objectives: (1) Define and explore $\sec^{-1}(x)$, $\csc^{-1}(x)$, and $\cot^{-1}(x)$, (2) Write a trigonometric function as an algebraic function.

Example 1 Graph the \csc , \sec , and \cot functions to find appropriate domains and ranges for their respective inverse functions. Then sketch the inverse functions.



Example 2 Find the exact value of: $\csc\left[\cos^{-1}\left(\frac{-\sqrt{3}}{2}\right)\right]$

Example 3 Show that $\csc^{-1}(x) = \sin^{-1}\left(\frac{1}{x}\right)$.

Converting a Trigonometric Expression to Algebraic

Example 4 Find an algebraic expression for: $\cot[\cos^{-1}(\frac{x}{2})]$

Example 5 Find an algebraic expression for: $\csc[\tan^{-1}(x - 3)]$

Example 6 Find an algebraic expression for: $\sin[2 \cos^{-1}(3x)]$

Example 7 Find an algebraic expression for $\sin(\sin^{-1}(x) + \sec^{-1}(x + 1))$