

FINDING INVERSES FOR SECANT, COSECANT AND COTANGENT ON A CALCULATOR

(Notes for using arc and inverse notations for sec x, csc x, cot x)

Arc Notation	Inverse Notation (use on calculator)
$\sec x = \frac{1}{\cos x} \Rightarrow \operatorname{arcsec} x = \arccos\left(\frac{1}{x}\right)$	$\sec^{-1} x = \cos^{-1}\left(\frac{1}{x}\right)$
$\csc x = \frac{1}{\sin x} \Rightarrow \operatorname{arccsc} x = \arcsin\left(\frac{1}{x}\right)$	$\csc^{-1} x = \sin^{-1}\left(\frac{1}{x}\right)$
<p>But this pattern doesn't work with tan x.</p> <p style="text-align: center;">If you use:</p> $\cot x = \frac{1}{\tan x} \Rightarrow \operatorname{arccot} x = \arctan\left(\frac{1}{x}\right)$ <p>You will NOT get all possible solutions.</p> <p style="text-align: center;">USE THIS FORMULA INSTEAD:</p> $\operatorname{arccot} x = \frac{\pi}{2} - \arctan x$	<p style="text-align: center;">Easiest formula:</p> $\cot^{-1} x = \frac{\pi}{2} - \tan^{-1} x$ <p style="text-align: center;">Complete formula:</p> $\cot^{-1} x = \begin{cases} \tan^{-1}\left(\frac{1}{x}\right); & x > 0 \\ \tan^{-1}\left(\frac{1}{x}\right) + \pi; & x < 0 \\ \frac{\pi}{2}; & x = 0 \end{cases}$