

Derivadas: Derivada de Trigonométricas Inversas

JLC062 \ JCE025

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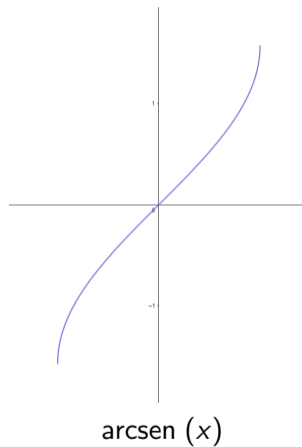
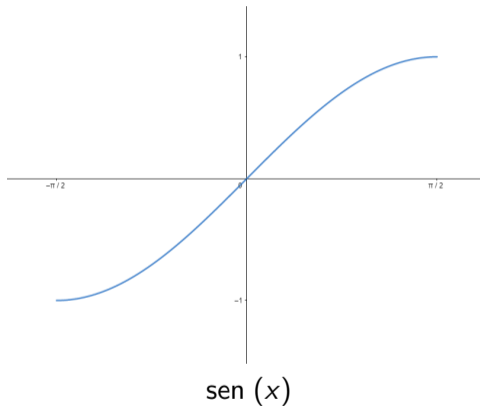
Definição das Funções

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Função e Inversa	Restr. x	Restr. θ
$\arcsen x = \theta \Leftrightarrow \sin(\theta) = x$	$[-1, 1]$	$\left[-\frac{\pi}{2}, \frac{\pi}{2}\right]$
$\arccos x = \theta \Leftrightarrow \cos(\theta) = x$	$[-1, 1]$	$[0, \pi]$
$\arctan x = \theta \Leftrightarrow \tan(\theta) = x$	\mathbb{R}	$\left(-\frac{\pi}{2}, \frac{\pi}{2}\right)$
$\operatorname{arcsec} x = \theta \Leftrightarrow \sec(\theta) = x$	$ x \geq 1$	$\left(0, \frac{\pi}{2}\right] \cup \left[\pi, \frac{3\pi}{2}\right)$
$\operatorname{arccsc} x = \theta \Leftrightarrow \csc(\theta) = x$	$ x \geq 1$	$\left[0, \frac{\pi}{2}\right) \cup \left[\pi, \frac{3\pi}{2}\right)$
$\operatorname{arccot} x = \theta \Leftrightarrow \cot(\theta) = x$	\mathbb{R}	$(0, \pi)$

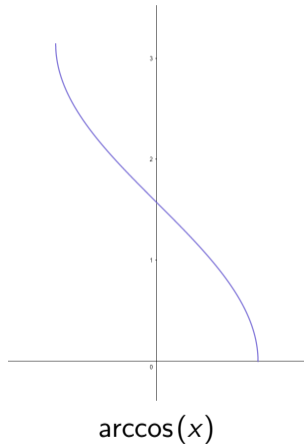
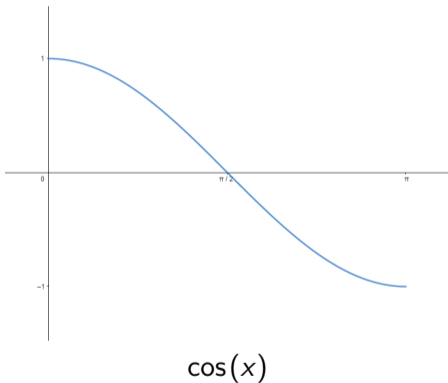
Definição das Funções

Gráficos



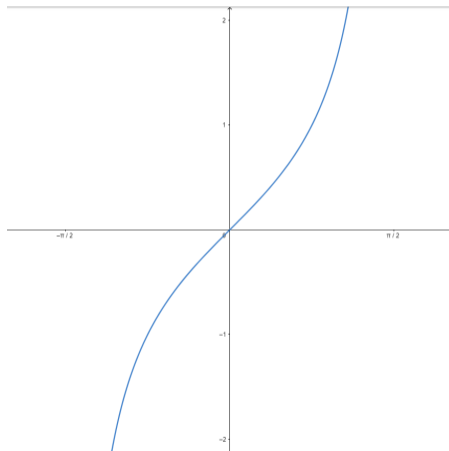
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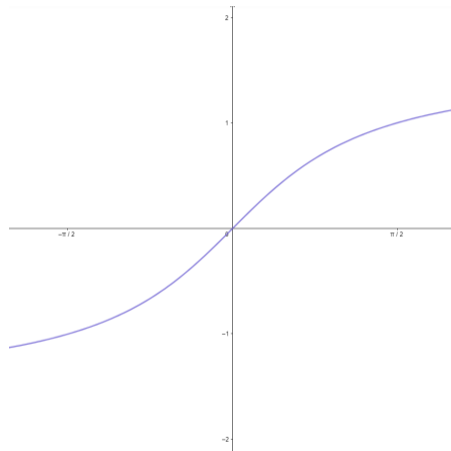


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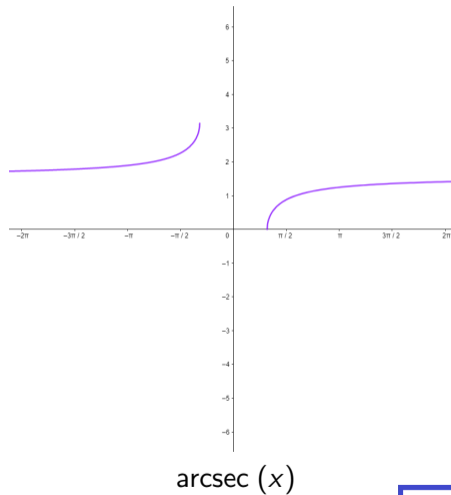
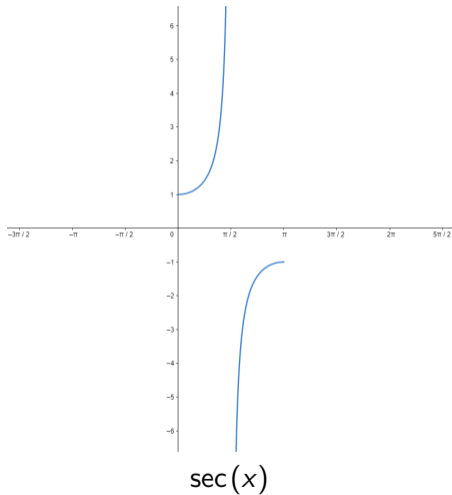
$\tan(x)$



$\arctan(x)$

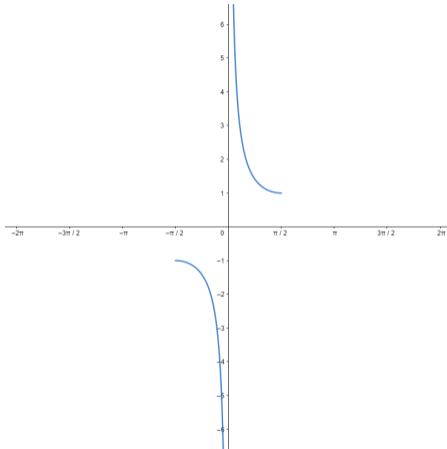
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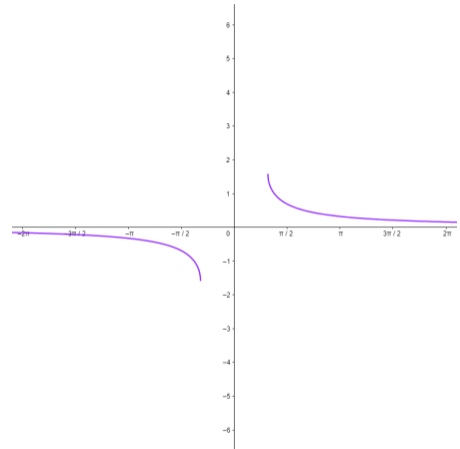


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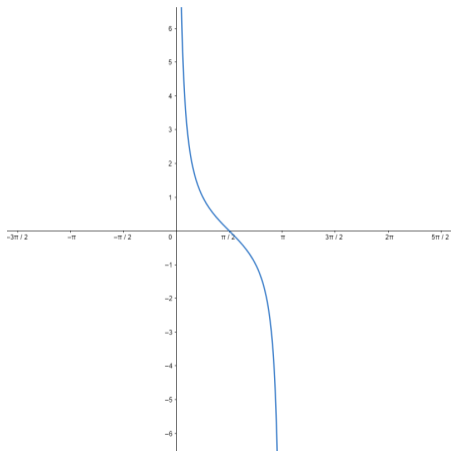
$\csc(x)$



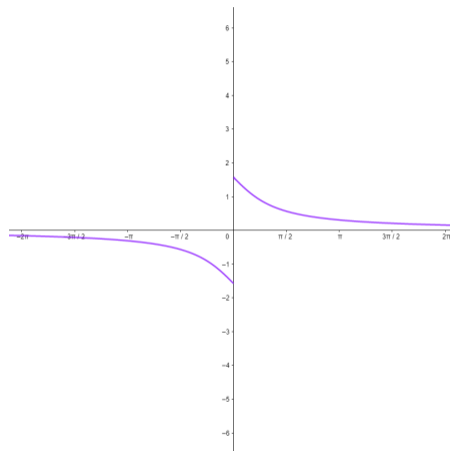
$\operatorname{arccsc}(x)$

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$\cot(x)$



$\operatorname{arccot}(x)$

Como proceder???

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Ex. 1 - Derivar $\arcsen x = \theta$

RESUMO - DERIVAÇÃO DE INVERSAS TRIGONOMÉTRICAS

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$$\frac{d(\arcsen x)}{dx} = \frac{1}{\sqrt{1-x^2}}$$

$$\frac{d(\arccos x)}{dx} = -\frac{1}{\sqrt{1-x^2}}$$

$$\frac{d(\arctan x)}{dx} = \frac{1}{1+x^2}$$

$$\frac{d(\operatorname{arcsec} x)}{dx} = \frac{1}{x\sqrt{x^2-1}}$$

$$\frac{d(\operatorname{arccsc} x)}{dx} = -\frac{1}{x\sqrt{x^2-1}}$$

$$\frac{d(\operatorname{arccot} x)}{dx} = -\frac{1}{1+x^2}$$

Bons Estudos!!!