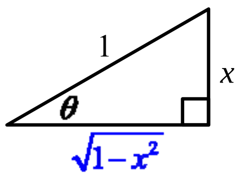
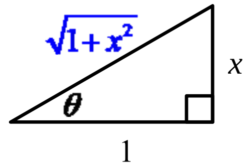
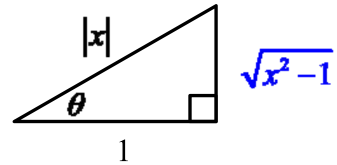
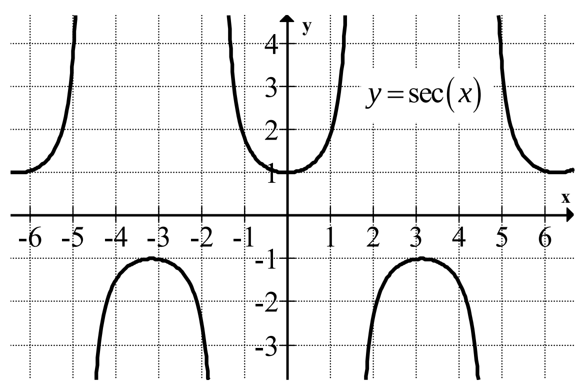
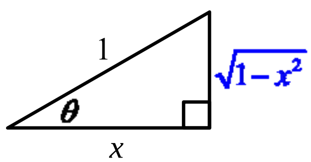
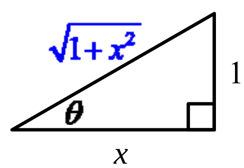
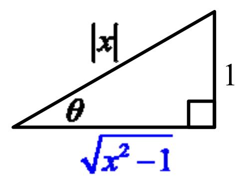
$\arcsin(x)=\theta$ $\updownarrow$ $x=\sin(\theta)$	$\arctan(x)=\theta$ $\updownarrow$ $x=\tan(\theta)$	$\text{arcsec}(x)=\theta$ $\updownarrow$ $x=\sec(\theta)$
		
$x=\sin(\theta)$ $\frac{d}{dx}[x]=\frac{d}{dx}[\sin(\theta)]$ $1=\cos(\theta)\cdot\theta'$ $1=\frac{\sqrt{1-x^2}}{1}\cdot\theta'$ $1=\sqrt{1-x^2}\cdot\theta'$ $\theta'=\frac{1}{\sqrt{1-x^2}}$ $[\arcsin(x)]'=\frac{1}{\sqrt{1-x^2}}$	$x=\tan(\theta)$ $\frac{d}{dx}[x]=\frac{d}{dx}[\tan(\theta)]$ $1=\sec^2(\theta)\cdot\theta'$ $1=\left(\frac{\sqrt{1+x^2}}{1}\right)^2\cdot\theta'$ $1=(1+x^2)\cdot\theta'$ $\theta'=\frac{1}{1+x^2}$ $[\arctan(x)]'=\frac{1}{1+x^2}$	$\lvert x\rvert=\sec(\theta)$ $\frac{d}{dx}[\lvert x\rvert]=\frac{d}{dx}[\sec(\theta)]$ $\frac{x}{\lvert x\rvert}=\sec(\theta)\tan(\theta)\cdot\theta'$ $\frac{x}{\lvert x\rvert}=x\left(\sqrt{x^2-1}\right)\cdot\theta'$ $\theta'=\frac{1}{\lvert x\rvert\sqrt{x^2-1}}$ $[\text{arcsec}(x)]'=\frac{1}{\lvert x\rvert\sqrt{x^2-1}}$

Note: The domain of the $f(x)=\text{arcsec}(x)$ is the range of $g(x)=\sec(x)$, which is $(-\infty,1]\cup[1,\infty)$.

Since the domain of $f(x)=\text{arcsec}(x)$ includes negative values. In the proof of the derivative, the length of the hypotenuse of the triangle must be positive, so x should be replaced with $|x|$.



$\operatorname{arccos}(x)=\theta$ $\updownarrow$ $x=\cos(\theta)$	$\operatorname{arccot}(x)=\theta$ $\updownarrow$ $x=\cot(\theta)$	$\operatorname{arccsc}(x)=\theta$ $\updownarrow$ $x=\csc(\theta)$
		
$x=\cos(\theta)$ $\frac{d}{dx}[x]=\frac{d}{dx}[\cos\theta]$ $1=-\sin(\theta)\cdot\theta'$ $1=-\left(\sqrt{1-x^2}\right)\cdot\theta'$ $\theta'=-\frac{1}{\sqrt{1-x^2}}$ $\left[\operatorname{arccos}(x)\right]'=-\frac{1}{\sqrt{1-x^2}}$	$x=\cot(\theta)$ $\frac{d}{dx}[x]=\frac{d}{dx}[\cot(\theta)]$ $1=-\csc^2(\theta)\cdot\theta'$ $1=-\left[\frac{1}{\sqrt{1+x^2}}\right]^2\cdot\theta'$ $1=-\frac{1}{1+x^2}\cdot\theta'$ $\theta'=-\frac{1}{1+x^2}$ $\left[\operatorname{arccot}(x)\right]'=-\frac{1}{1+x^2}$	$\lvert x\rvert=\csc(\theta)$ $\frac{d}{dx}[\lvert x\rvert]=\frac{d}{dx}[\csc(\theta)]$ $\frac{x}{\lvert x\rvert}=-\csc(\theta)\cot(\theta)\cdot\theta'$ $\frac{x}{\lvert x\rvert}=-(x)\left(\sqrt{x^2-1}\right)\cdot\theta'$ $\theta'=-\frac{1}{\lvert x\rvert\sqrt{x^2-1}}$ $\left[\operatorname{arccsc}(x)\right]'=-\frac{1}{\lvert x\rvert\sqrt{x^2-1}}$

Note: The domain of the $f(x)=\operatorname{arccsc}(x)$ is the range of $g(x)=\csc(x)$, which is $(-\infty,1]\cup[1,\infty)$.

Since the domain of $f(x)=\operatorname{arccsc}(x)$ includes negative values. In the proof of the derivative, the length of the hypotenuse of the triangle must be positive, so x should be replaced with $|x|$.