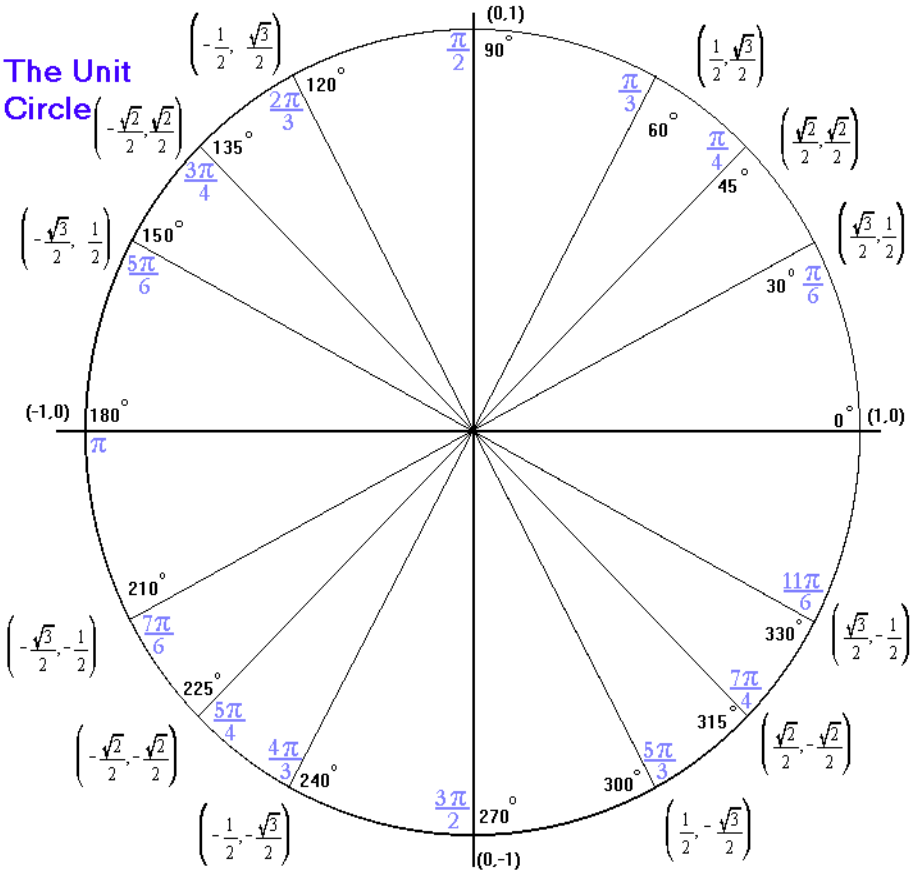
TRIGONOMETRY FORMULAS



$$\cos(-x)=\cos(x) \qquad \sin(-x)=-\sin(x) \qquad \tan(-x)=-\tan(x)$$

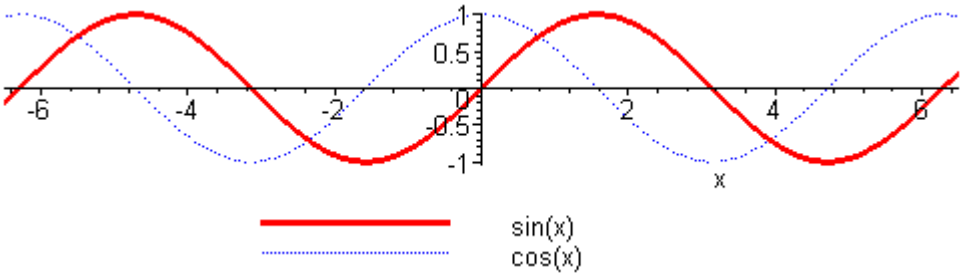
$$\sec(-x)=\sec(x) \qquad \csc(-x)=-\csc(x) \qquad \cot(-x)=-\cot(x)$$

$$\cos^2(x)+\sin^2(x)=1 \qquad 1+\tan^2(x)=\sec^2(x) \qquad \cot^2(x)+1=\csc^2(x)$$

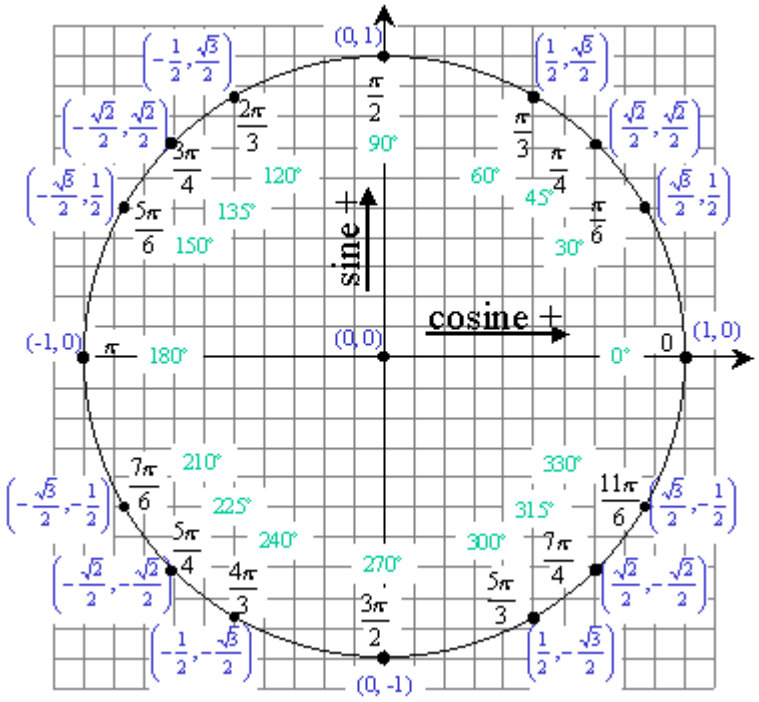
$$\cos(x+y)=\cos(x)\cos(y)-\sin(x)\sin(y) \qquad \sin(x+y)=\sin(x)\cos(y)+\cos(x)\sin(y)$$

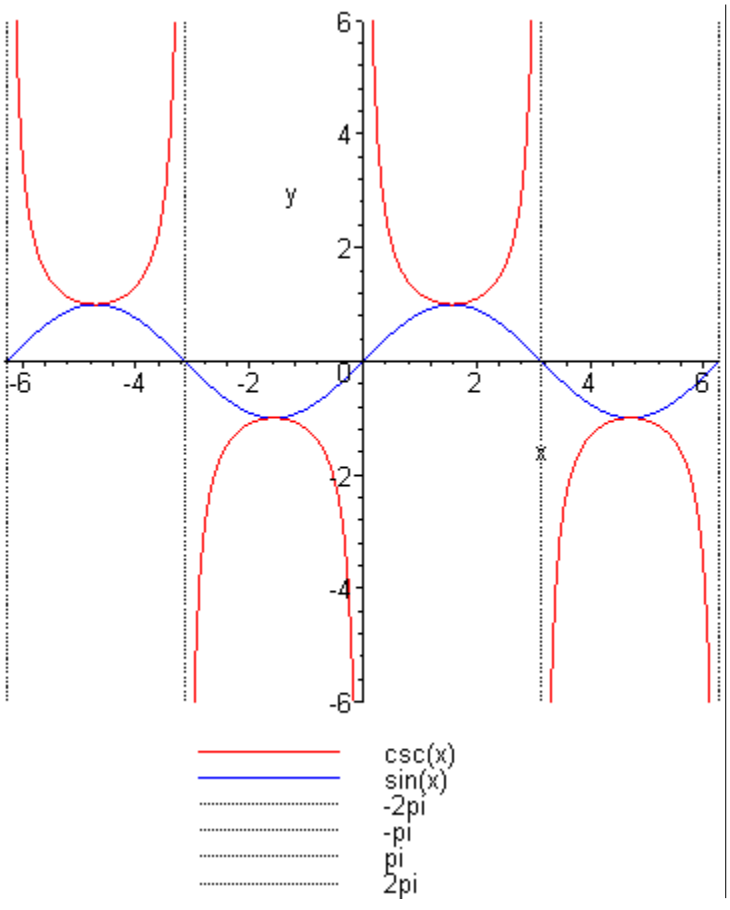
$$\cos(x-y)=\cos(x)\cos(y)+\sin(x)\sin(y) \qquad \sin(x-y)=\sin(x)\cos(y)-\cos(x)\sin(y)$$

$$\sin(2x)=2\sin(x)\cos(x) \qquad \cos(2x)=\begin{cases}\cos^2(x)-\sin^2(x)\\ 2\cos^2(x)-1\\ 1-2\sin^2(x)\end{cases}$$

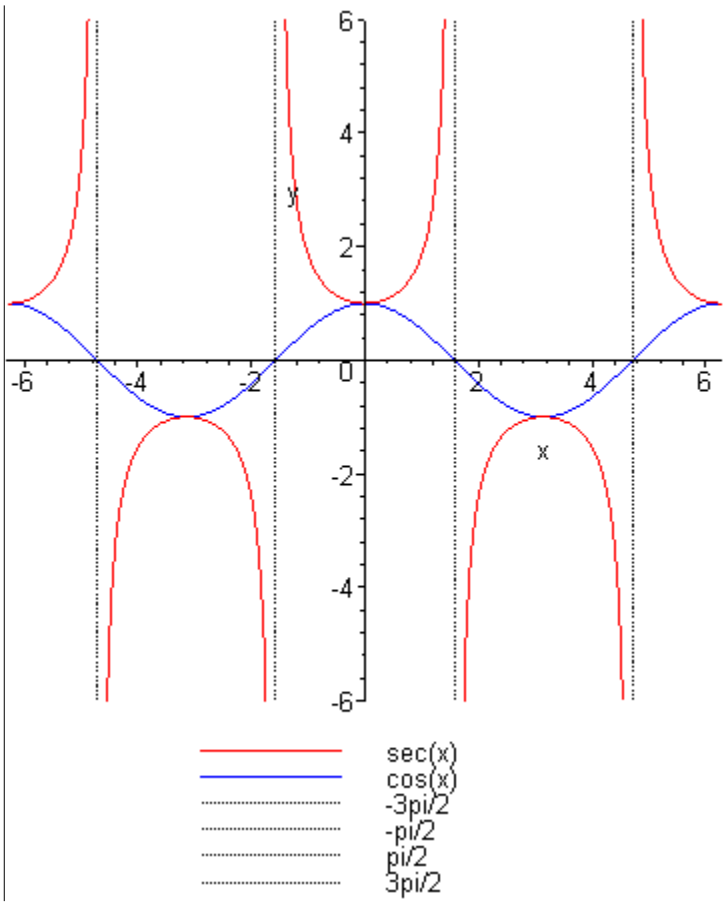


Calculus Trigonometry Reference

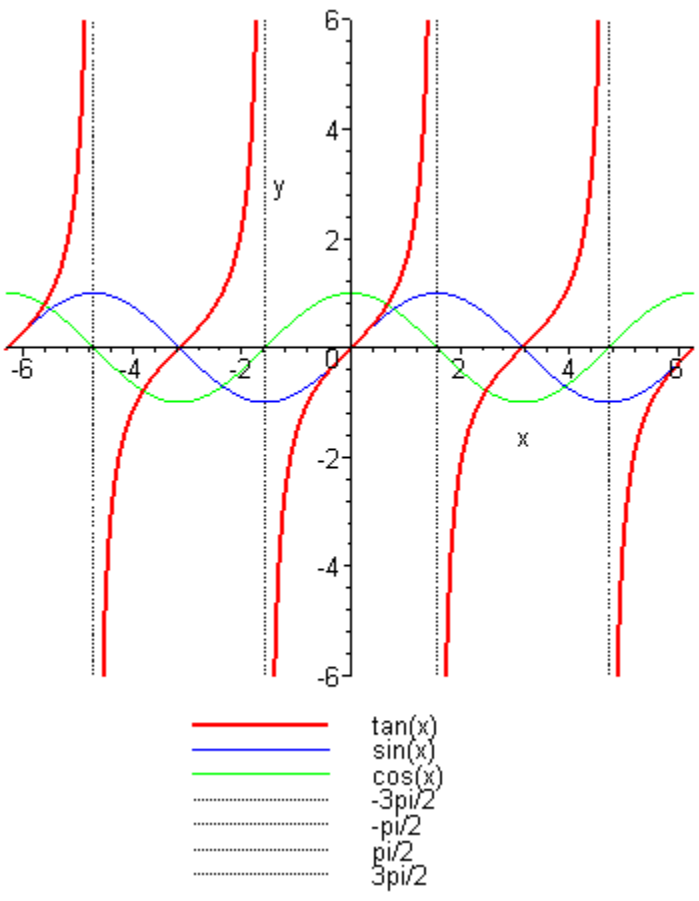




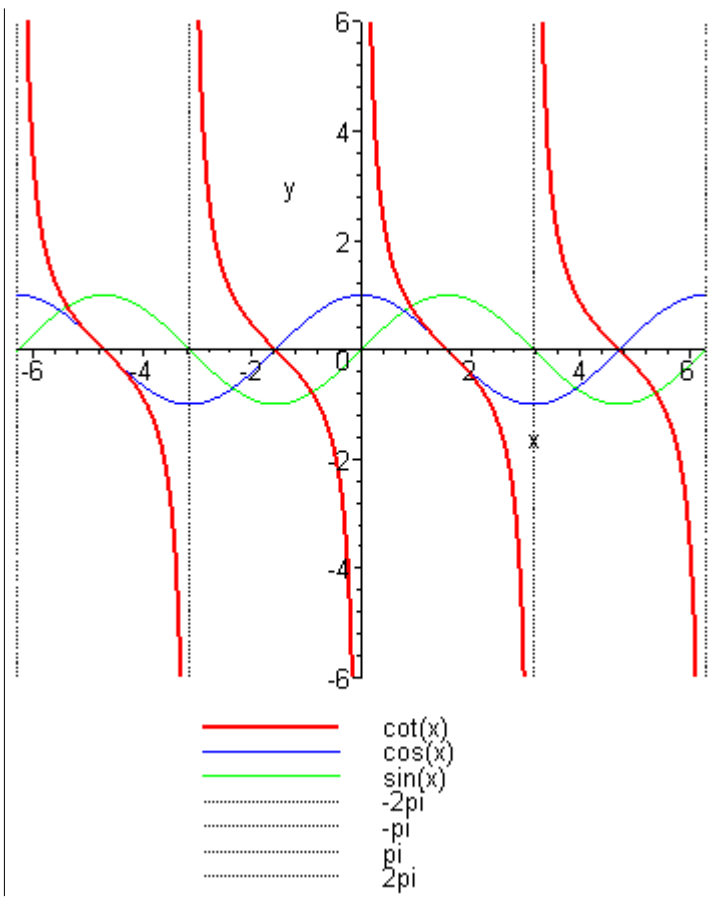
$$\csc(x) = \frac{1}{\sin(x)}$$



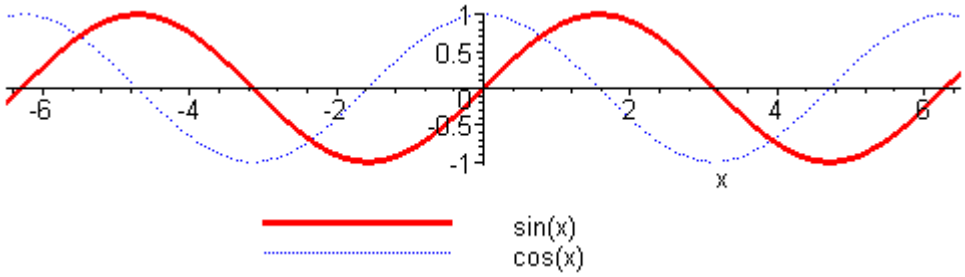
$$\sec(x) = \frac{1}{\cos(x)}$$



$$\tan(x) = \frac{\sin(x)}{\cos(x)}$$

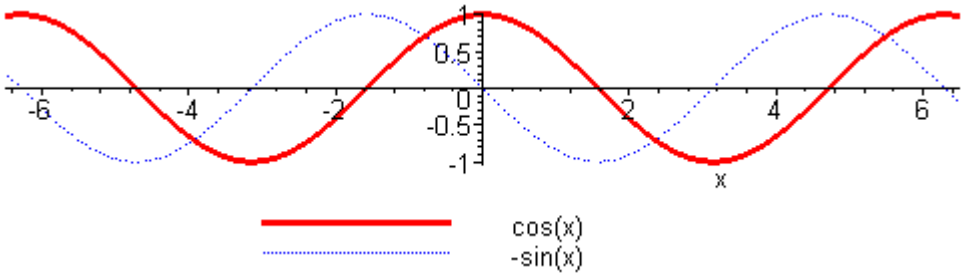


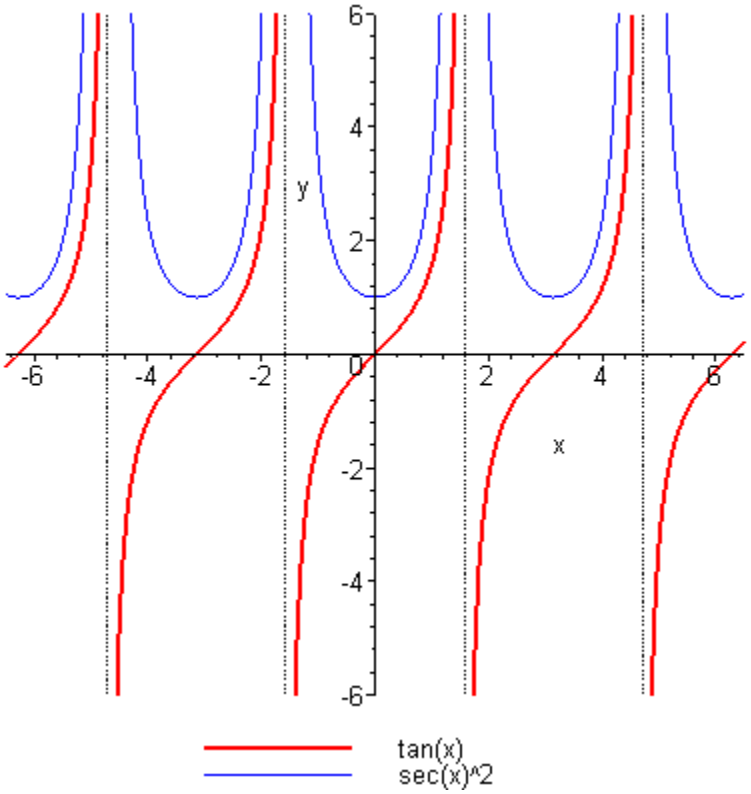
$$\cot(x) = \frac{\cos(x)}{\sin(x)}$$

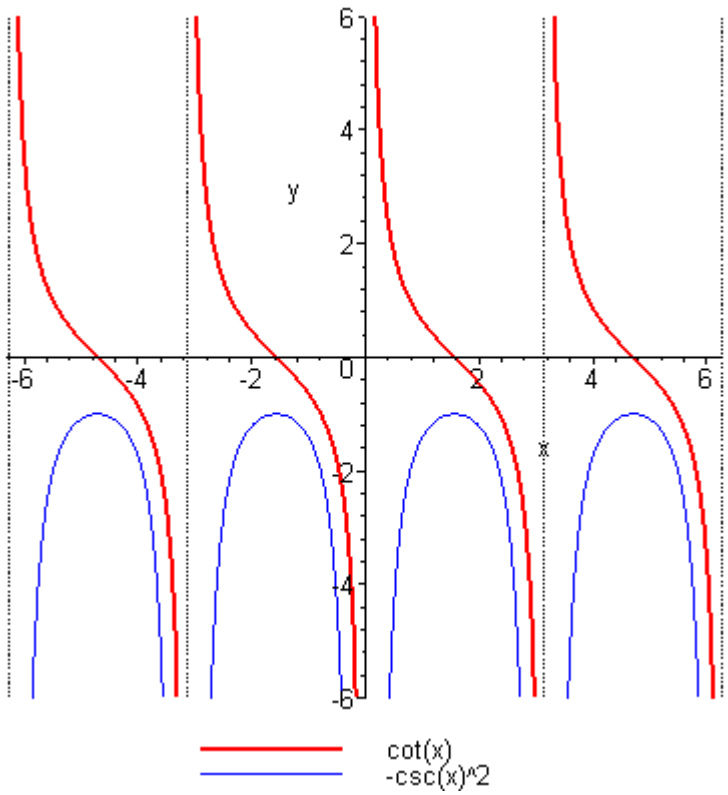


$$\frac{d}{dx}\sin(x) = \cos(x)$$

$$\frac{d}{dx}\cos(x) = -\sin(x)$$





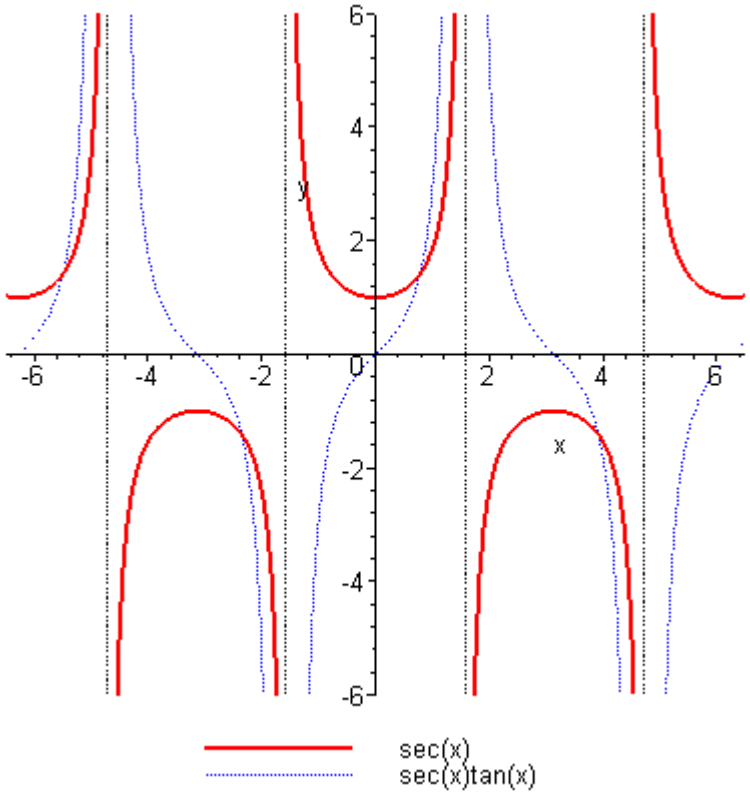


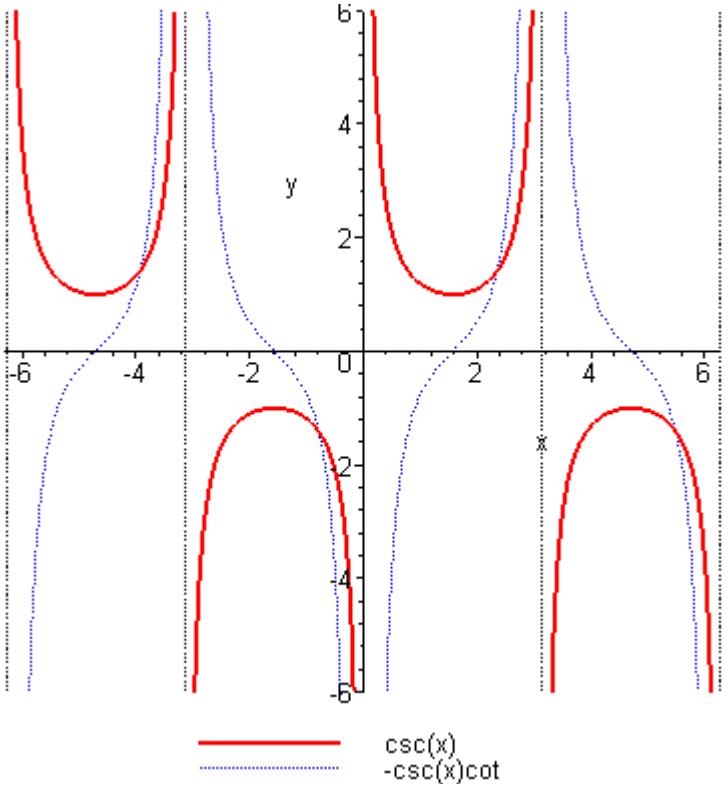
$$\frac{d}{dx}\tan(x)=\sec^2(x)$$

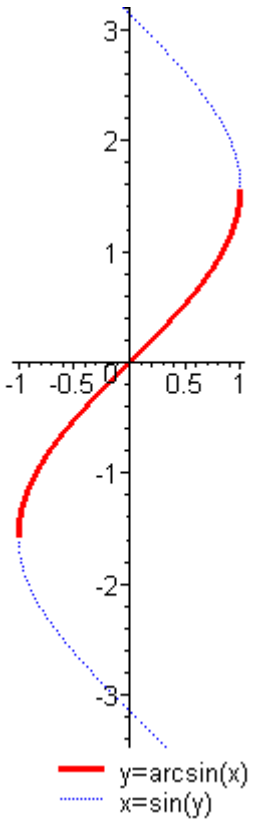
$$\frac{d}{dx}\cot(x)=-\csc^2(x)$$

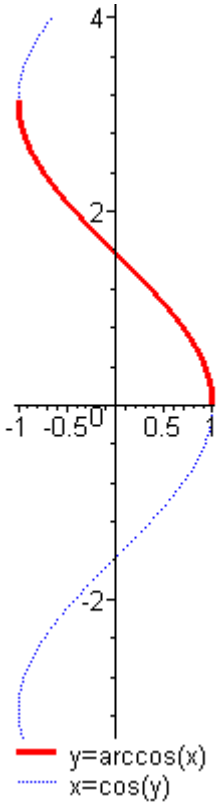
$$\frac{d}{dx}\sec(x)=\sec(x)\tan(x)$$

$$\frac{d}{dx}\csc(x)=-\csc(x)\cot(x)$$





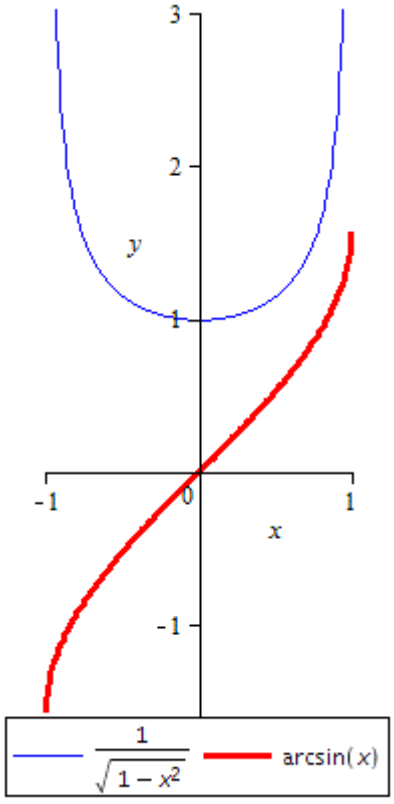




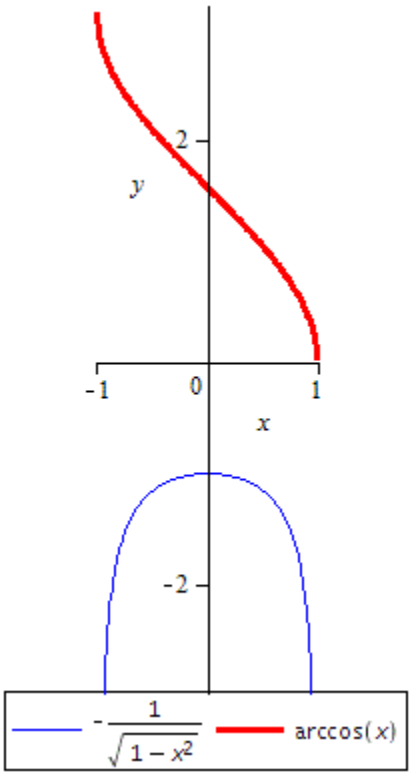
Domain: [-1,1], Range: [-π/2, π/2]

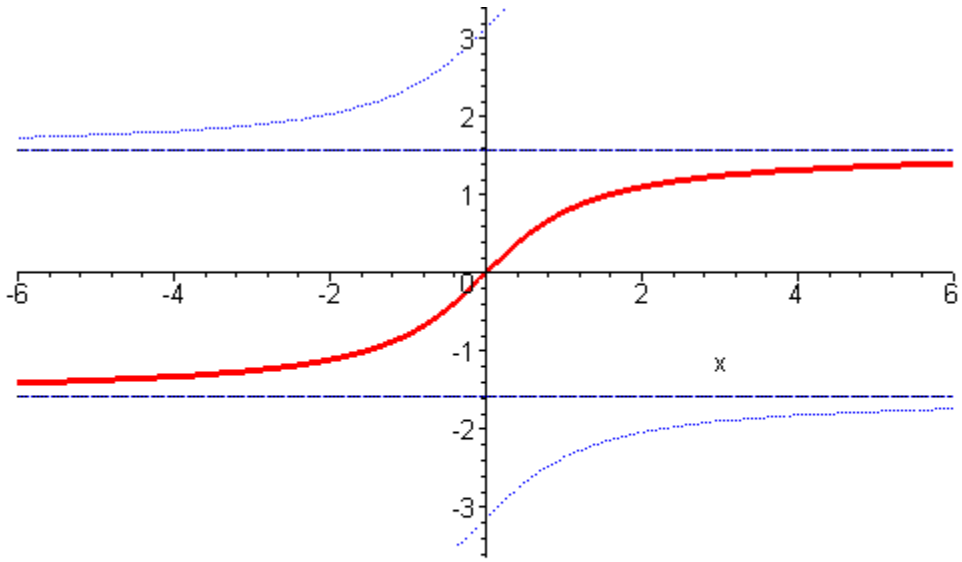
arccos(*x*) = π/2 – arcsin(*x*); Domain: [-1,1], Range: [0, π]

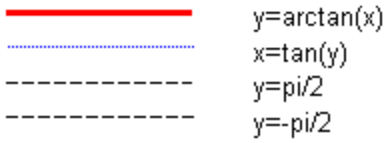
$$\frac{d}{dx}\arcsin(x) = \frac{1}{\sqrt{1-x^2}}$$

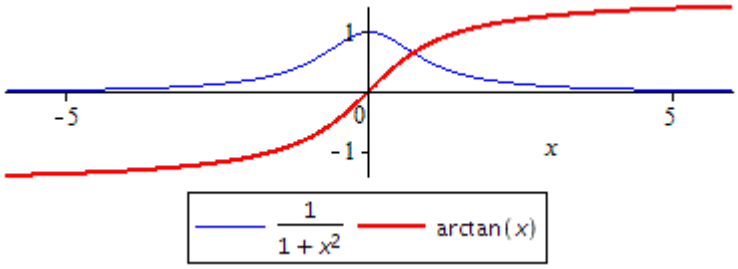


$$\frac{d}{dx}\arccos(x) = \frac{-1}{\sqrt{1-x^2}}$$



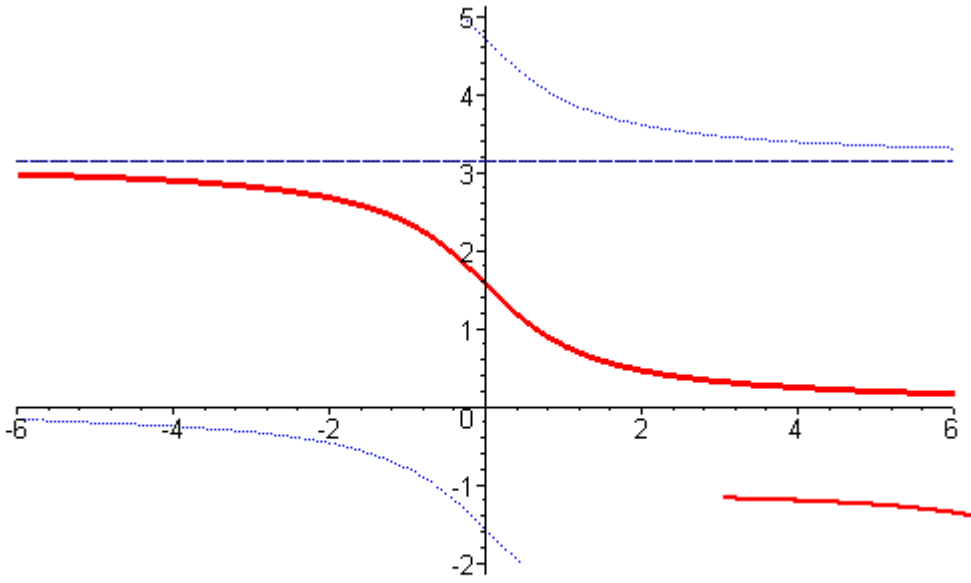


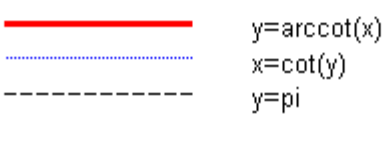


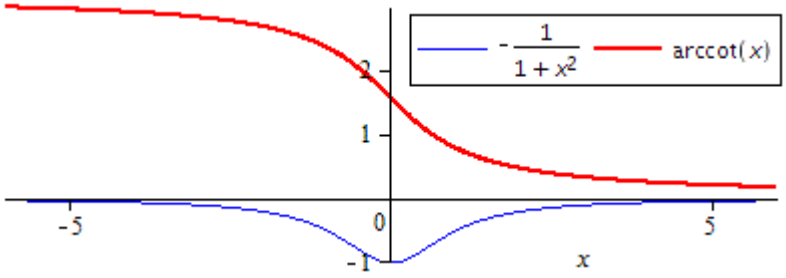


Domain: (-∞, ∞), Range: (-π/2, π/2)

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

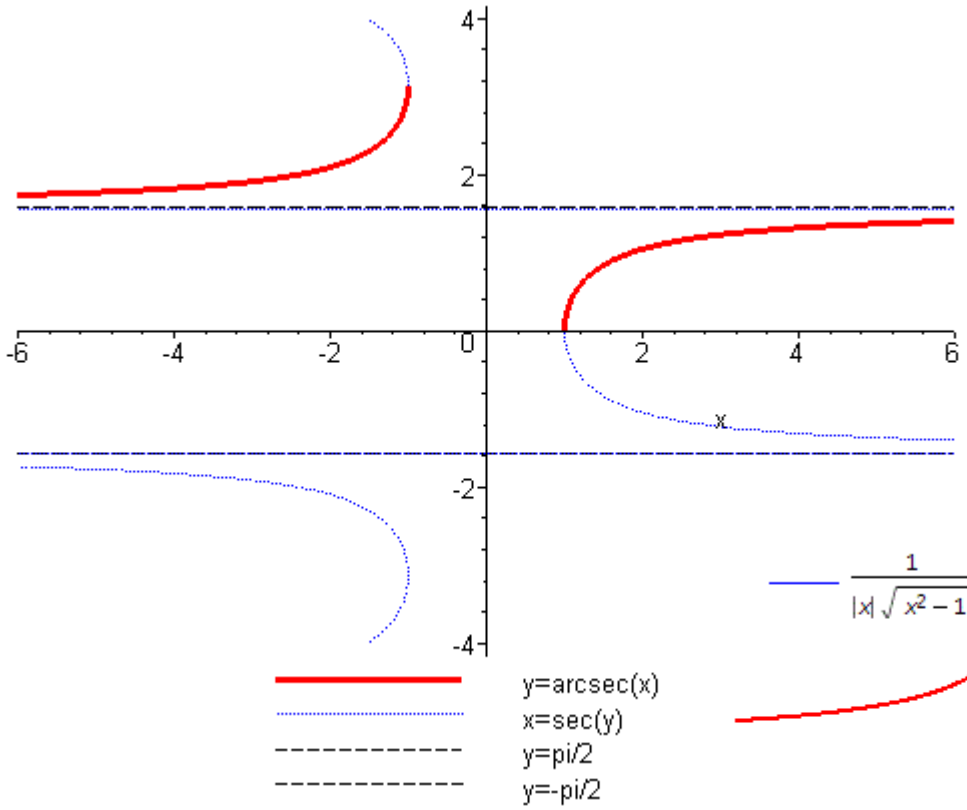


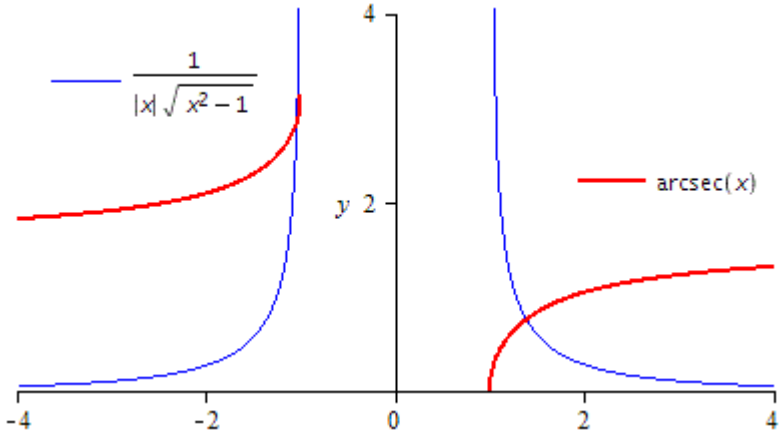




arccot(x) = π/2 – arctan(x); Domain: (-∞, ∞), Range: (0, π)

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





arcsec(x) = arccos(1/x), Domain: (-∞, -1] ∪[1,∞), Range: [0, π/2)∪(π/2, π]; $\frac{d}{dx} arc\sec(x) = \frac{1}{|x|\sqrt{x^2-1}}$

---

arccsc(x) = arcsin(1/x), Domain: (-∞, -1] ∪[1,∞), Range: [-π/2, 0)∪(0, π/2]; $\frac{d}{dx} arc\csc(x) = \frac{-1}{|x|\sqrt{x^2-1}}$