Symmetry and Complementary Properties of Trigonometric Functions

First Quadrant:

 $sin\left(\frac{π}{2}-θ\right)=cos\left(θ\right) $

$$cos\left(\frac{π}{2}-θ\right)=sin\left(θ\right) $$

$$\tan(\left(\frac{π}{2}- θ\right))= \frac{1}{\tan(\left(θ\right))}$$

Second Quadrant

 $sin\left(π-θ\right)=sin\left(θ\right) $

$$cos\left(π-θ\right)=-cos\left(θ\right) $$

$$tan\left(π-θ\right)=-tan\left(θ\right) $$

$$sin\left(\frac{π}{2}+θ\right)=cos\left(θ\right) $$

$$cos\left(\frac{π}{2}+θ\right)=-sin\left(θ\right) $$

$$tan\left(\frac{π}{2}+θ\right)=- \frac{1}{tan\left(θ\right)}=- cot\left(θ\right) $$

Third Quadrant

 $sin\left(π+θ\right)=-sin\left(θ\right) $

$$cos\left(π+θ\right)=-cos\left(θ\right) $$

$$tan\left(π+θ\right)=tan\left(θ\right) $$

$$sin\left(\frac{3π}{2}-θ\right)=-cos\left(θ\right) $$

$$cos\left(\frac{3π}{2}-θ\right)=-sin\left(θ\right) $$

$$tan\left(\frac{3π}{2}-θ\right)=\frac{1}{tan\left(θ\right)}=cot\left(θ\right) $$

Fourth Quadrant

 $sin\left(2π-θ\right)=sin\left(-θ\right)=-sin\left(θ\right) $

$$cos\left(2π-θ\right)=cos\left(-θ\right)=cos\left(θ\right) $$

$$tan\left(2π-θ\right)=tan\left(-θ\right)=-tan\left(θ\right) $$

$$sin\left(\frac{3π}{2}+θ\right)=-cos\left(θ\right) $$

$$cos\left(\frac{3π}{2}+θ\right)=sin\left(θ\right) $$

$$tan\left(\frac{3π}{2}+θ\right)=- \frac{1}{tan\left(θ\right)}=- cot\left(θ\right) $$