5.

a) $\sin(x-\pi) = \sin(-(\pi-x))$

$= -\sin(\pi-x)$

$= -\sin x$

b) $\cos(x-\frac{\pi}{2}) = \cos(-(\frac{\pi}{2}-x))$

$= \cos(\frac{\pi}{2}-x)$

$= \sin x$

c) $\operatorname{tg}(-x-\pi) = \operatorname{tg}(-(\pi+x))$

$= -\operatorname{tg}(\pi+x)$

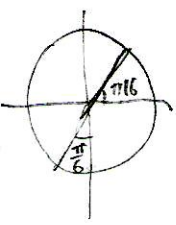
$= -\operatorname{tg} x$

6.

a) $\sec(\pi+\frac{\pi}{3}) = \frac{1}{\cos(\pi+\frac{\pi}{3})}$

$= \frac{1}{-\cos\frac{\pi}{3}} = \frac{1}{-\frac{1}{2}} = -2$

b) $\operatorname{cosec}(\frac{3\pi}{2}-\frac{\pi}{6}) =$



$= \frac{1}{\sin(\frac{3\pi}{2}-\frac{\pi}{6})}$

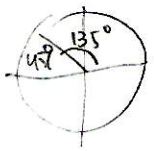
$= \frac{1}{-\cos\frac{\pi}{6}} = -\frac{1}{\frac{\sqrt{3}}{2}}$

$= -\frac{2}{\sqrt{3}}$

c) $\operatorname{ctg}(\frac{\pi}{2}+\frac{\pi}{3}) =$

$= -\operatorname{tg}\frac{\pi}{3} = -\sqrt{3}$

d) $\sec\frac{3\pi}{4} = \sec(\pi-\frac{\pi}{4})$



$= \frac{1}{\cos(\pi-\frac{\pi}{4})}$

$= \frac{1}{-\cos\frac{\pi}{4}} = \frac{1}{-\frac{\sqrt{2}}{2}}$

$= -\frac{2}{\sqrt{2}} = -\sqrt{2}$

e) $\operatorname{cosec}(\frac{3\pi}{2}-\frac{\pi}{4}) =$

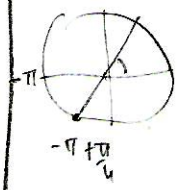
$= \frac{1}{\sin(\frac{3\pi}{2}-\frac{\pi}{4})}$

$= \frac{1}{-\cos\frac{\pi}{4}} = -\frac{1}{\frac{\sqrt{2}}{2}} = -\frac{2}{\sqrt{2}}$

$\rightarrow -\sqrt{2}$

f) $\operatorname{ctg}(-\pi+\frac{\pi}{4}) =$

$= \operatorname{ctg}\frac{\pi}{4} = \frac{1}{\operatorname{tg}\frac{\pi}{4}} = \frac{1}{1}$



$= 1$