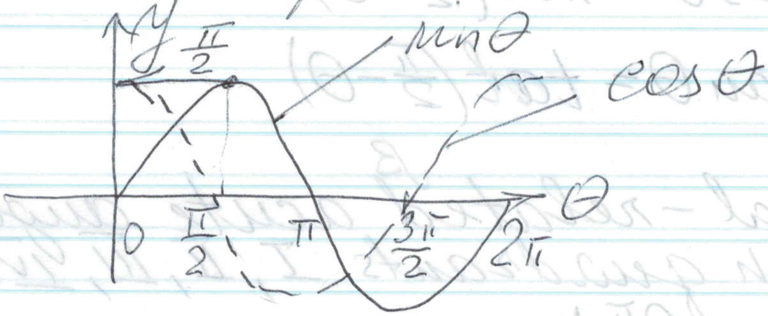
7.1 Equivalent trig. functions.

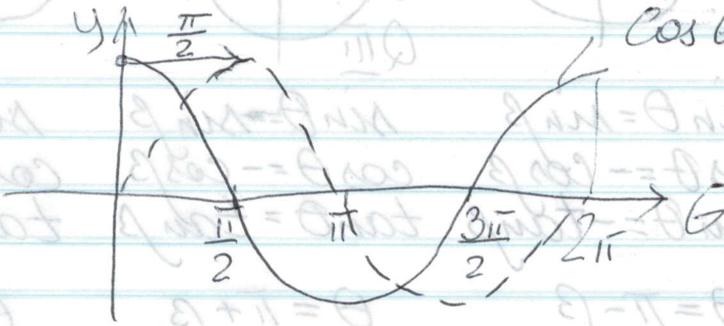
① Horizontal translations that involve multiples of the period of trig. f-s.

$\sin\theta = \sin(\theta + 2\pi) \rightarrow \csc\theta$
$\cos\theta = \cos(\theta + 2\pi) \rightarrow \sec\theta$
$\tan\theta = \tan(\theta + \pi) \rightarrow \cot\theta$

② Horizontal translations of $\frac{\pi}{2}$ that involve both a sine and a cosine f-n



$f(\theta) = \sin\theta$; $f(\theta) = \sin(\theta + \frac{\pi}{2})$
$d = -\frac{\pi}{2}$ $= \cos\theta$



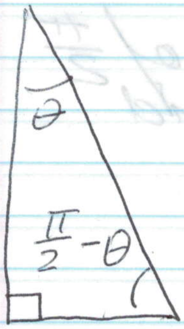
$f(\theta) = \cos\theta$ $f(\theta) = \cos(\theta - \frac{\pi}{2})$
$d = \frac{\pi}{2}$ $= \sin\theta$

(3) even, odd functions.

$\cos(-\theta) = \cos\theta$ - even.

$$\left.\begin{aligned}\sin(-\theta) &= -\sin\theta \\ \tan(-\theta) &= -\tan\theta\end{aligned}\right\}\text{ odd.}$$

(4) Cofunction identities



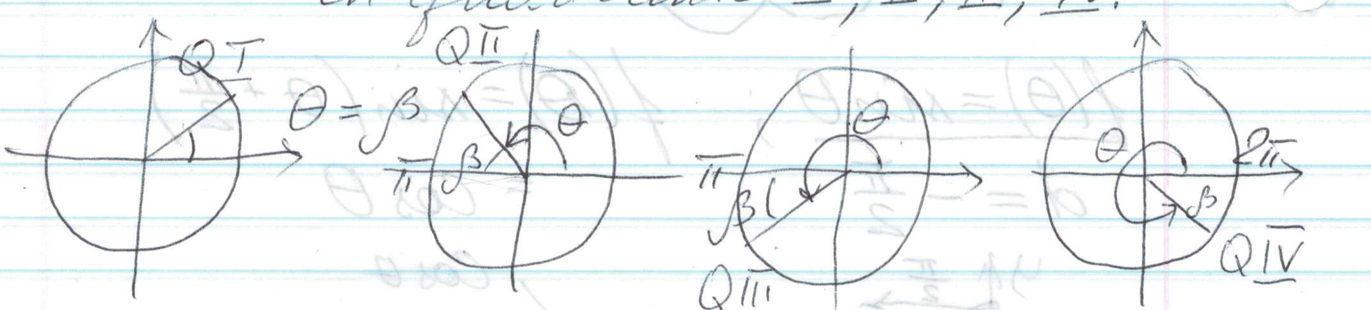
$\sin\theta = \cos\left(\frac{\pi}{2}-\theta\right)$ $\left(\sin\frac{\pi}{3} = \cos\frac{\pi}{6} = \frac{\sqrt{3}}{2}\right)$

$\cos\theta = \sin\left(\frac{\pi}{2}-\theta\right)$ $\left(\sin\frac{\pi}{6} = \cos\frac{\pi}{3} = \frac{1}{2}\right)$

$\tan\theta = \cot\left(\frac{\pi}{2}-\theta\right)$

θ β

(5) Principal-related acute angle in quadrants I, II, III, IV.



$\sin\theta = \sin\beta$	$\sin\theta = \sin\beta$	$\sin\theta = -\sin\beta$	$\sin\theta = -\sin\beta$
$\cos\theta = \cos\beta$	$\cos\theta = -\cos\beta$	$\cos\theta = -\cos\beta$	$\cos\theta = \cos\beta$
$\tan\theta = \tan\beta$	$\tan\theta = -\tan\beta$	$\tan\theta = \tan\beta$	$\tan\theta = -\tan\beta$
$\theta = \beta$	$\theta = \pi - \beta$	$\theta = \pi + \beta$	$\theta = 2\pi - \beta$