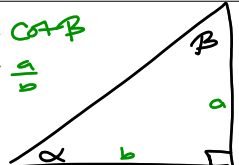


$\tan \alpha = \cot \beta$
 $\frac{a}{b} = \frac{a}{b}$

 $\sin \alpha = \cos \beta$
 $\sin \alpha = \cos(90^\circ - \alpha)$
Co-function identity
 $\sin \alpha = \cos(\frac{\pi}{2} - \alpha)$
 $\cos \alpha = \sin \beta$
 $\cos \alpha = \sin(90^\circ - \alpha)$
 $\cos \alpha = \sin(\frac{\pi}{2} - \alpha)$
 $\csc \alpha = \sec \beta$
 $\csc \alpha = \sec(90^\circ - \alpha)$

HW Questions:
 27. 25 26
 27 $\frac{\csc x \cos x + \cot x}{\sec x \cot x}$
 $= \frac{\frac{1}{\sin x} \cdot \cos x + \frac{\cos x}{\sin x}}{\frac{1}{\sin x} \cdot \frac{\cos x}{\sin x}}$
 $= \frac{\frac{\cos x}{\sin x} + \frac{\cos x}{\sin x}}{\frac{\cos x}{\sin^2 x}} = \frac{2 \cos x}{\frac{\cos x}{\sin x}} = \frac{2 \cos x \cdot \sin x}{1} = 2 \cos x$

25. $\frac{\tan x + \sin x \sec x}{\csc x \tan x}$
 $= \frac{\frac{\sin x}{\cos x} + \sin x \cdot \frac{1}{\cos x}}{\frac{1}{\sin x} \cdot \frac{\sin x}{\cos x}}$
 $= \frac{\frac{\sin x}{\cos x} + \frac{\sin x}{\cos x}}{\frac{1}{\cos x}} = \frac{2 \sin x}{\frac{1}{\cos x}} = 2 \sin x \cos x$

$\frac{1 - \sin^2 x}{\csc^2 x - 1}$
 $= \frac{\cos^2 x}{\cot^2 x} = \frac{\cos^2 x}{\frac{\cos^2 x}{\sin^2 x}}$
 $= \cos^2 x \cdot \frac{\sin^2 x}{\cos^2 x} = \sin^2 x$

Even or odd y-axis symmetry
 Sine odd $f(x) = f(-x)$ Even
 $\sin(-x) = -\sin(x)$ origin symmetry odd
 Cosine Even $f(-x) = f(x)$
 $\cos(-x) = \cos(x)$
 tangent odd $f(-x) = -f(x)$
 $\tan(-x) = -\tan(x)$
 $\csc \theta$ odd $\csc(-x) = -\csc(x)$
 $\sec \theta$ Even $\sec(-x) = \sec(x)$
 $\cot \theta$ odd $\cot(-x) = -\cot(x)$

If $\tan \theta = 1.28$ Find $\cot(\theta - \frac{\pi}{2})$
 $\tan \theta = \cot(\frac{\pi}{2} - \theta)$
 $= \cot(-\theta + \frac{\pi}{2})$
 because odd $= \cot(-(\theta - \frac{\pi}{2}))$
 $= -\cot(\theta - \frac{\pi}{2})$
 $\frac{1.28}{-1} = \frac{-\cot(\theta - \frac{\pi}{2})}{-1}$
 $-1.28 = \cot(\theta - \frac{\pi}{2})$

If $\sin x = -0.37$ Find $\cos(x - \frac{\pi}{2})$

$$\begin{aligned} \sin x &= \cos(\frac{\pi}{2} - x) \\ &= \cos(-x + \frac{\pi}{2}) \\ &= \cos(-(x - \frac{\pi}{2})) \\ \text{Even} \rightarrow &= \cos(x - \frac{\pi}{2}) \\ -0.37 &= \cos(x - \frac{\pi}{2}) \end{aligned}$$

$\cos \theta = -1.73$
Find $\sin(\theta - \frac{\pi}{2})$

$$\begin{aligned} \cos \theta &= \sin(\frac{\pi}{2} - \theta) \\ &= \sin(-(\theta - \frac{\pi}{2})) \\ -1.73 &= -\sin(\theta - \frac{\pi}{2}) \\ \frac{-1.73}{-1} &= \frac{-1}{-1} \\ 1.73 &= \sin(\theta - \frac{\pi}{2}) \end{aligned}$$

If $\tan \theta = -8 + \sin \theta > 0$ ^{Q II}
Find $\sin \theta$ and $\cos \theta$

If $\cot \theta = -3 + \cos \theta < 0$
Find $\csc \theta$ and $\tan \theta$

$\sin x = \frac{1}{6}$ $\cos x > 0$
 $\cot x$ and $\sec x$

Method 3: Eliminating Fractions

$$\frac{1}{1 + \cos x}$$

$$\frac{\cos^2 x}{1 - \sin x}$$

$$\frac{4}{\sec x + \tan x}$$