

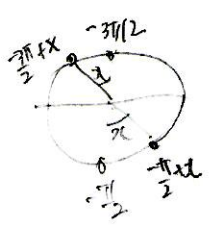
7.

a)

$$\begin{cases} \cos(\pi+x) = -\cos x \\ \cos(\frac{\pi}{2}+x) = -\sin x \\ \cos(\pi-x) = -\cos x \\ \sin(\frac{3\pi}{2}-x) = -\cos x \\ \sec(\pi+x) = \frac{1}{\cos(\pi+x)} = \frac{1}{-\cos x} \\ = -\sec x \end{cases}$$

$$\begin{aligned} & \frac{\cos(\pi+x)\cos(\frac{\pi}{2}+x)}{\cos(\pi-x)} - \frac{\sin(\frac{3\pi}{2}-x)}{\sec(\pi+x)} = \\ & = \frac{-\cancel{\cos x}(-\sin x)}{-\cancel{\cos x}} - \frac{-\cos x}{-\sec x} = \\ & = -\sin x - \frac{\cos x}{\frac{1}{\cos x}} = \\ & = -\sin x - \cos^2 x \end{aligned}$$

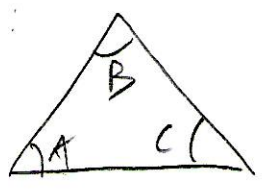
b)

$$\begin{aligned} \sin(x-\frac{\pi}{2}) &= -\cos x \\ \cos(\pi-x) &= -\cos x \\ \tan(x-\frac{3\pi}{2}) &= -\cot x \\ \tan(\pi+x) &= \tan x \end{aligned}$$


(3)

$$\begin{aligned} \therefore \frac{\sin(x-\frac{\pi}{2})}{\cos(\pi-x)} + \frac{\tan(x-\frac{3\pi}{2})}{-\tan(\pi+x)} &= \\ &= \frac{-\cos x}{-\cos x} + \frac{-\cot x}{-\tan x} = \\ &= \underline{\underline{1 + \cot^2 x}} \end{aligned}$$

8.



$$\begin{aligned} A+B+C &= \pi \\ A+C &= \pi - B \end{aligned}$$

$$\begin{aligned} \therefore \sin(A+C) &= \sin(\pi - B) \\ &= \sin B \end{aligned}$$

$$\boxed{\sin B = \sin(A+C)}$$

9.

a)

$$\begin{aligned} \cos 2a \cos a - \sin 2a \sin a &= \\ &= \cos(2a+a) \\ &= \underline{\underline{\cos 3a}} \end{aligned}$$