Quiz 9 – MATH 1540 Spring 2023

Recall the basic trigonometric identities:

Definitional

$$\tan(\theta) = \frac{\sin(\theta)}{\cos(\theta)}; \sec(\theta) = \frac{1}{\cos(\theta)}; \csc(\theta) = \frac{1}{\sin(\theta)}; \cot(\theta) = \frac{\cos(\theta)}{\sin(\theta)}$$

Cofunction

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

Even/Odd

$$\cos(-\theta) = \cos(\theta) \sin(-\theta) = -\sin(\theta)$$

Pythagorean: $\cos^2(\theta) + \sin^2(\theta) = 1$

Simplify

1. $\sin(-t)\csc(t) + \dfrac{1}{\cos(-t)\sec(-t)}$

2. $\dfrac{\sin\left(\frac{\pi}{2} - x\right)}{\cos(-x)}$

3. $\dfrac{\sin(x)}{\cos(x)} + \dfrac{\cos(x)}{\sin(x)}$
   (note: the answer is *not* $\tan(x) + \cot(x)$; a simpler one exists!)