

Simplifying and Verifying with Sum & Difference Identities WS#1-7. Simplify each of the following. Remember—first step is always to **EXPAND**

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

2. $\tan(\theta + \pi)$

3. $\cos(\pi - \theta) + \sin\left(\frac{\pi}{2} + \theta\right)$

4. $\sin(\theta + \pi) + \cos\left(\theta - \frac{\pi}{2}\right)$

5. $\tan(\theta + \pi) - \tan(\pi - \theta)$

6. $\sin\left(\theta + \frac{\pi}{4}\right) + \sin\left(\theta - \frac{\pi}{4}\right)$

7. $\cos\left(\theta + \frac{\pi}{4}\right) - \cos\left(\theta - \frac{\pi}{4}\right)$

#8-13. Verify the following identities.

$$8. \quad \cos(\pi - \theta) + \sin\left(\frac{\pi}{2} + \theta\right) = 0$$

$$9. \quad \sin(\theta + \pi) + \cos\left(\theta - \frac{\pi}{2}\right) = 0$$

$$10. \quad \sin(x + y) + \sin(x - y) = 2 \sin x \cos y$$

$$11. \quad \cos(x + y) + \cos(x - y) = 2 \cos x \cos y$$

$$12. \quad \tan(x + \pi) - \tan(\pi - x) = 2 \tan x$$

$$13. \quad \tan\left(\frac{\pi}{4} - \theta\right) = \frac{1 - \tan \theta}{1 + \tan \theta}$$