

Supplemental Worksheet #7

Each of the following may be stated as the function of the sum or difference of two angles. State that function.

1. $\cos 53^\circ \cdot \cos 27^\circ - \sin 53^\circ \cdot \sin 27^\circ$

2.
$$\frac{\tan\left(\frac{\pi}{2}\right) + \tan\left(\frac{\pi}{3}\right)}{1 - \tan\left(\frac{\pi}{2}\right) \cdot \tan\left(\frac{\pi}{3}\right)}$$

3. $\sin 69^\circ \cdot \cos 21^\circ - \sin 21^\circ \cdot \cos 69^\circ$

4. $\cos(7x) \cdot \cos(4x) + \sin(4x) \cdot \sin(7x)$

5. $\cos\left(\frac{\pi}{7}\right) \cdot \sin\left(\frac{\pi}{4}\right) + \sin\left(\frac{\pi}{7}\right) \cdot \cos\left(\frac{\pi}{4}\right)$

Prove each of the following identities using the sum and difference identities.

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

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

8. $\cos 6x \cdot \cos 5x + \sin 6x \cdot \sin 5x = \cos x$

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

Solve each of the following equations for θ where $0 \leq \theta \leq \frac{\pi}{2}$.

10. $\sin\left(\frac{\pi}{2} - \theta\right) = \frac{1}{2}$

11. $\tan(\pi - \theta) = \tan \frac{3\pi}{4}$

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

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