

Practice 14-6**Angle Identities**

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Find each exact value. Use a sum or difference identity.

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|----------------------|-------------------------|------------------------|
| 1. $\sin 240^\circ$ | 2. $\tan (-300^\circ)$ | 3. $\sin (-105^\circ)$ |
| 4. $\cos 15^\circ$ | 5. $\sin 15^\circ$ | 6. $\sin 135^\circ$ |
| 7. $\cos 225^\circ$ | 8. $\tan 225^\circ$ | 9. $\tan 240^\circ$ |
| 10. $\cos 390^\circ$ | 11. $\sin (-300^\circ)$ | 12. $\tan (-75^\circ)$ |

Verify each identity.

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| 13. $\cot \left(\theta - \frac{\pi}{2} \right) = -\tan \theta$ | 14. $\sin \left(\theta - \frac{\pi}{2} \right) = -\cos \theta$ |
| 15. $\cos \left(\theta - \frac{\pi}{2} \right) = \sin \theta$ | 16. $\sec \left(\theta - \frac{\pi}{2} \right) = \csc \theta$ |

Use the definitions of the trigonometric ratios for a right triangle to derive each cofunction identity.

17. A cofunction identity for $\tan (90^\circ - A)$
 18. A cofunction identity for $\cos (90^\circ - A)$

Solve each trigonometric equation for $0 \leq \theta < 2\pi$.

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| 19. $2 \sin \left(\frac{\pi}{2} - \theta \right) \tan \theta = 1$ | 20. $\cos \left(\frac{\pi}{2} - \theta \right) \tan \theta - \sec (-\theta) = 1$ |
| 21. $\sin^2 \theta + \cos^2 \theta = \tan \theta$ | 22. $2 \sin^2 \theta = \sin (-\theta)$ |
| 23. $\sqrt{3} \cos \left(\frac{\pi}{2} - \theta \right) = \cos (-\theta)$ | 24. $\cot \left(\frac{\pi}{2} - \theta \right) = \sin \theta$ |
| 25. $\csc \left(\frac{\pi}{2} - \theta \right) = \tan \theta$ | 26. $2 \cos \left(\frac{\pi}{2} - \theta \right) = \tan (-\theta)$ |
| 27. $\csc^2 \theta - \cot^2 \theta = 2 \cos \theta$ | 28. $\sin \left(\theta - \frac{\pi}{2} \right) \cos \theta = 0$ |

Use mental math to find the value of each trigonometric expression.

29. $\sin 10^\circ \cos 80^\circ + \cos 10^\circ \sin 80^\circ$
 30. $\cos 110^\circ \cos 70^\circ - \sin 110^\circ \sin 70^\circ$
 31. $\sin 310^\circ \cos 130^\circ - \cos 310^\circ \sin 130^\circ$
 32. $\cos 95^\circ \cos 50^\circ + \sin 95^\circ \sin 50^\circ$