

#1-7: Use a sum or difference identity to find exact values, in simplest form.

1. $\sin 105^\circ$ 2. $\cos 75^\circ$ 3. $\tan 15^\circ$ 4. $\sin 345^\circ$
 5. $\cos 165^\circ$ 6. $\tan 255^\circ$ 7. $\cos 195^\circ$

#8-13: Simplify to a trig function of a single angle and find the exact value, in simplest form.

8. $\frac{\tan 60^\circ - \tan 15^\circ}{1 + \tan 60^\circ \tan 15^\circ}$ 9. $\cos 160^\circ \cos 70^\circ + \sin 160^\circ \sin 70^\circ$
 10. $\sin \frac{2\pi}{3} \cos \frac{\pi}{12} + \cos \frac{2\pi}{3} \sin \frac{\pi}{12}$ 11. $\cos 160^\circ \cos 50^\circ - \sin 160^\circ \sin 50^\circ$
 12. $\frac{\tan \frac{2\pi}{3} + \tan \frac{7\pi}{6}}{1 - \tan \frac{2\pi}{3} \tan \frac{7\pi}{6}}$ 13. $\sin 285^\circ \cos 15^\circ - \cos 285^\circ \sin 15^\circ$

#14-18: Given that $\sin A = \frac{4}{5}$, where $0 \leq A \leq \frac{\pi}{2}$ and $\tan B = \frac{-5}{12}$, where $\frac{-\pi}{2} < B \leq 0$.

Find exact values in simplest form.

14. $\sin(A + B)$ 15. $\cos(A - B)$ 16. $\tan(A + B)$ 17. $\cot A$ 18. $\sec B$

#19-20: Simplify to a single trig function.

19. $\cos^2 y (1 + \cot^2 y)$ 20. $\frac{\tan y + \cot y}{\csc^2 y}$

#21-22: Solve for x , if $0 \leq x < 2\pi$.

21. $\cos\left(x + \frac{\pi}{3}\right) + \cos\left(x - \frac{\pi}{3}\right) = 1$ 22. $\tan(x + \pi) + \cos\left(x - \frac{\pi}{2}\right) = 0$

(hint: check solutions!)

#23-24: Prove each identity.

23. $\cos\left(x - \frac{3\pi}{2}\right) \equiv -\sin x$ 24. $\sin\left(\frac{\pi}{6} + x\right) + \sin\left(\frac{\pi}{6} - x\right) \equiv \cos x$

- Answers: 1. $\frac{\sqrt{6} + \sqrt{2}}{4}$ 2. $\frac{\sqrt{6} - \sqrt{2}}{4}$ 3. $2 - \sqrt{3}$ 4. $\frac{-\sqrt{6} + \sqrt{2}}{4}$ 5. $\frac{-\sqrt{6} - \sqrt{2}}{4}$ 6. $2 + \sqrt{3}$
 7. $\frac{-\sqrt{6} - \sqrt{2}}{4}$ 8. $\tan 45^\circ; 1$ 9. $\cos 90^\circ; 0$ 10. $\sin \frac{3\pi}{4}; \frac{\sqrt{2}}{2}$ 11. $\cos 210^\circ; \frac{-\sqrt{3}}{2}$
 12. $\tan \frac{11\pi}{6}; \frac{-\sqrt{3}}{3}$ 13. $\sin 270^\circ; -1$ 14. $\frac{33}{65}$ 15. $\frac{16}{65}$ 16. $\frac{33}{56}$ 17. $\frac{3}{4}$ 18. $\frac{13}{12}$
 19. $\cot^2 y$ 20. $\tan y$ 21. 0 22. $0, \pi$