

CHAPTER REVIEW

Chapter 10: Trigonometric Addition Formulas

QUICK CHECK

Chapter 10

Complete these exercises before trying the Practice Test for Chapter 10. If you have difficulty with a particular problem, review the indicated section.

1. Simplify and evaluate $\cos 250^\circ \cos 40^\circ + \sin 250^\circ \sin 40^\circ$. (Section 10-1)
2. If $\tan \alpha = 2$ and $\tan \beta = \frac{1}{4}$, find (a) $\tan(\alpha + \beta)$ and (b) $\tan(\alpha - \beta)$. (Section 10-2)
3. Simplify. (Section 10-3)
 - a. $2 \cos^2 \frac{x}{2} - 1$
 - b. $\frac{\sin 80^\circ}{1 + \cos 80^\circ}$
 - c. $\sin x \cos x$
4. Describe two ways to solve the equation $\tan 2x + \tan x = 0$ for $0^\circ \leq x < 360^\circ$. Then choose one of the methods and solve the equation. (Section 10-4)

PRACTICE TEST

Chapter 10

Simplify the given expression.

1. $\sin \frac{\pi}{6} \cos \frac{5\pi}{6} + \sin \frac{5\pi}{6} \cos \frac{\pi}{6}$
2. $2 \sin \left(\frac{\pi}{4} - \frac{x}{2} \right) \cos \left(\frac{\pi}{4} - \frac{x}{2} \right)$
3. $(1 - \cos^2 x)(1 - \cot^2 x)$
4. $(\sin x - \cos x)^2 - 1$

Evaluate each of the following if $\sin A = \frac{5}{13}$, $\cos B = \frac{15}{17}$, and $0 < B < \frac{\pi}{2} < A < \pi$.

5. $\sin(A + B)$
6. $\cos(2A - B)$
7. $\tan(A - B)$
8. $\sin \frac{1}{2}B$
9. Find the acute angle, to the nearest tenth of a degree, formed by the intersection of the graphs of $3x + 4y = 12$ and $2x - y = -3$.

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

10. $2 \sin^2 x = 2 + \cos 2x$
11. $\sin 2x + \sin x = 0$
12. $\csc x \sin 2x = 2 + \tan \frac{1}{2}x$
13. $\cot x \tan 2x = 3$

Prove that the given equation is an identity.

14. $\sin^2 \frac{x}{2} + \cos x = \cos^2 \frac{x}{2}$
15. $\cos^4 y - \sin^4 y - \cos 2y = 0$

Consider the functions $f(x) = \sin 2x$ and $g(x) = \cos x$ on the interval $0 \leq x \leq 2\pi$.

16. Solve $f(x) = g(x)$.
17. Solve $f(x) < g(x)$.
18. Sketch the graphs of f and g on the same set of axes.