

Honors Algebra 2 Chapter 14 Review

Multiple Choice

Identify the choice that best completes the statement or answers the question.

1. Simplify $\cos x - \sin x \cot x$.

- a. $\cos x \sin x - \cos x \cot x$
- b. 0
- c. $2 \cos x$
- d. 1

Write the letter for the correct answer in the blank at the right of each question.

2. Simplify $\frac{\cos \theta}{\sin \theta}$.

- a. $\tan \theta$
- b. $\cot \theta$
- c. $\sec \theta$
- d. $\csc \theta$

3. Simplify $\frac{\sec \theta \tan \theta}{\sin \theta}$.

- a. $\sec^2 \theta$
- b. $\cot \theta$
- c. $\tan^2 \theta$
- d. $\cos^2 \theta$

4. If $\sec \theta = \frac{5}{4}$ on the interval $(0, 90^\circ)$, find $\sin \theta$.

- a. $-\frac{3}{5}$
- b. $-\frac{4}{5}$
- c. $\frac{3}{4}$
- d. $\frac{3}{5}$

5. **SCIENCE** The amount of force needed to keep a stationary object on a flat surface from moving is called static friction. If a book weighs p pounds and it is on a flat surface that is at an angle of θ degrees, the coefficient of static friction c for the book is given by $cp \cos \theta = p \sin \theta$. Which of the following is an equivalent equation for c ?

- a. $c = \sin \theta$
- b. $c = \tan \theta$
- c. $c = \cos \theta$
- d. $c = \cot \theta$

6. Simplify $\frac{1 - \sec^2 \theta}{\tan^2 \theta}$.

- a. $\tan^2 \theta$
- b. $\csc^2 \theta$
- c. -1
- d. 1

7. Find the exact value of $\sin 15^\circ$.

- a. $\frac{-\sqrt{2} - \sqrt{6}}{4}$
- b. $\frac{\sqrt{6} - \sqrt{2}}{4}$
- c. $\frac{\sqrt{6} + \sqrt{2}}{4}$
- d. $\frac{\sqrt{2} - \sqrt{6}}{4}$

8. Which expression is equivalent to $\cos(\theta - 2\pi)$?

- a. $-\cos \theta$
- b. $\sin \theta$
- c. $\cos \theta$
- d. $-\sin \theta$

9. If $\csc \theta = -\frac{5}{4}$ on the interval $(270^\circ, 360^\circ)$, find $\tan \theta$.

- a. $-\frac{4}{3}$
- b. $\frac{3}{4}$
- c. $\frac{4}{3}$
- d. $-\frac{4}{5}$

10. Simplify $\frac{\cos x}{\sec x - 1} + \frac{\cos x}{\sec x + 1}$.

- a. $2 \tan^2 x$
- b. $2 \cos x$
- c. $2 \cos^2 x - 1$
- d. $2 \cot^2 x$

11. Find the exact value of $\sin 255^\circ$.

- a. $\frac{-\sqrt{2} - \sqrt{6}}{4}$
- b. $\frac{\sqrt{6} - \sqrt{2}}{4}$
- c. $\frac{\sqrt{6} + \sqrt{2}}{4}$
- d. $\frac{\sqrt{2} - \sqrt{6}}{4}$

12. Which expression is equivalent to $\cos(\theta - \pi)$?

- a. $-\cos \theta$
- b. $\sin \theta$
- c. $\cos \theta$
- d. $-\sin \theta$

Short Answer

13. Simplify $\frac{\sin x}{\csc x + 1}$

14. Simplify $\frac{1}{\sin x + 1} + \frac{1}{\sin x - 1}$.

15. Simplify $\frac{\tan^2 x - 1}{1 - \sec^2 x}$.

16. Find the exact value of $\cos 15^\circ$.

17. If $\tan \theta = \frac{7}{8}$ and θ is between 0° and 90° , find $\cos \theta$.

18. Simplify $\csc x \sec x - \tan x$.

19. Simplify $\tan x - \sin^3 x \sec x$

20. Simplify $\frac{\sec x}{\cos x + 1} + \frac{\sec x}{\cos x - 1}$.

Verify each identity.

21. $1 - 2 \sin x \cos x = (\sin x - \cos x)^2$

22. $\sin^2 x = \cos^2 x \sec^2 x - \cos^2 x$

23. Verify that $\sin \theta = \cos(90^\circ - \theta)$ is an identity.

24. Verify $\sin(180^\circ - \theta) = \sin \theta$.