

Chapter 5 Review

Name _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Determine if the following is an identity.

1) $\cot^2 x = (\csc x - 1)(\csc x + 1)$ 1) _____
 A) Not an identity B) Identity

2) $\frac{\cot^2 x}{\csc x - 1} = \frac{1 + \sin x}{\sin x}$ 2) _____
 A) Identity B) Not an identity

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Prove the identity.

3) $\frac{1 + \csc x}{\sec x} = \cos x + \cot x$ 3) _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Find an exact value.

4) $\tan 15^\circ$ 4) _____
 A) $\sqrt{3} - 2$ B) $\frac{-2 + \sqrt{3}}{4}$ C) $\frac{2 - \sqrt{3}}{4}$ D) $2 - \sqrt{3}$

5) $\sin \frac{11\pi}{12}$ 5) _____
 A) $\frac{\sqrt{2} - \sqrt{6}}{4}$ B) $\frac{\sqrt{6} + \sqrt{2}}{4}$ C) $\frac{\sqrt{6} - \sqrt{2}}{4}$ D) $\frac{-\sqrt{6} - \sqrt{2}}{4}$

Find the exact value by using a half-angle identity.

6) $\sin 22.5^\circ$ 6) _____
 A) $-\frac{1}{2}\sqrt{2 + \sqrt{2}}$ B) $-\frac{1}{2}\sqrt{2 - \sqrt{2}}$ C) $\frac{1}{2}\sqrt{2 - \sqrt{2}}$ D) $\frac{1}{2}\sqrt{2 + \sqrt{2}}$

Find all solutions of the equation.

7) $2 \cos x + \sqrt{2} = 0$ 7) _____
 A) $x = \frac{\pi}{4} + 2n\pi$ or $x = \frac{7\pi}{4} + 2n\pi$ B) $x = \frac{3\pi}{4} + 2n\pi$ or $x = \frac{5\pi}{4} + 2n\pi$
 C) $x = \frac{\pi}{4} + n\pi$ or $x = \frac{7\pi}{4} + n\pi$ D) $x = \frac{3\pi}{4} + n\pi$ or $x = \frac{5\pi}{4} + n\pi$

Solve the equation on the interval $[0, 2\pi)$.

8) $\cos^2 x + 2 \cos x + 1 = 0$ 8) _____
 A) 2π B) $\frac{\pi}{2}, \frac{3\pi}{2}$ C) π D) $\frac{\pi}{4}, \frac{7\pi}{4}$

9) $2 \sin^2 x = \sin x$

A) $0, \pi, \frac{\pi}{6}, \frac{5\pi}{6}$

B) $\frac{\pi}{3}, \frac{2\pi}{3}$

C) $\frac{\pi}{6}, \frac{5\pi}{6}$

D) $\frac{\pi}{2}, \frac{3\pi}{2}, \frac{\pi}{3}, \frac{2\pi}{3}$

9) _____

10) $\sin^2 x - \cos^2 x = 0$

A) $\frac{\pi}{4}, \frac{3\pi}{4}, \frac{5\pi}{4}, \frac{7\pi}{4}$

B) $\frac{\pi}{4}$

C) $\frac{\pi}{4}, \frac{\pi}{3}$

D) $\frac{\pi}{4}, \frac{\pi}{6}$

10) _____

Solve the equation on the interval $[0, 2\pi)$.

11) $\sin x - 2 \sin x \cos x = 0$

A) $\frac{\pi}{3}, \pi, \frac{5\pi}{3}, 2\pi$

B) $\frac{\pi}{3}, \frac{5\pi}{3}, 2\pi$

C) $0, \frac{\pi}{3}, \pi, \frac{5\pi}{3}$

D) $\frac{\pi}{3}, \frac{5\pi}{3}$

11) _____

Solve the problem.

12) The range r of a projectile is given by $r = \frac{1}{32}v^2 \sin 2\theta$, where v is the initial velocity and θ is the

angle of elevation. If r is to be 4000 ft and $v = 2000$ ft/sec, what must the angle of elevation be? Give your answer in degrees to the nearest hundredth.

A) 1.83°

B) 89.08°

C) 0.92°

D) 1.28°

12) _____