

Find the exact value of the expression.

1) $\cos^{-1}\left(-\frac{\sqrt{3}}{2}\right)$

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

B) $\frac{\pi}{6}$

C) $\frac{2\pi}{3}$

D) $-\frac{3\pi}{4}$

1) _____

Find the exact value of the expression. Do not use a calculator.

2) $\sin^{-1}\left(\sin\frac{7\pi}{6}\right)$

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

B) $\frac{\pi}{6}$

C) $\frac{7\pi}{6}$

D) $-\frac{\pi}{6}$

2) _____

Simplify the expression.

3) $\frac{\cos \theta}{1 + \sin \theta} + \tan \theta$

3) _____

A) $\sec \theta$

B) $\sin^2 \theta$

C) 1

D) $\cos \theta + \sin \theta$

Find the exact value of the expression.

4) $\sin\left(-\frac{11\pi}{12}\right)$

4) _____

A) $-\frac{\sqrt{6} + \sqrt{2}}{4}$

B) $\frac{\sqrt{6} - \sqrt{2}}{4}$

C) $\frac{\sqrt{2} + \sqrt{6}}{4}$

D) $\frac{\sqrt{2} - \sqrt{6}}{4}$

Use the information given about the angle θ , $0 \leq \theta \leq 2\pi$, to find the exact value of the indicated trigonometric function.

5) $\cos \theta = \frac{1}{4}$, $\csc \theta > 0$

Find $\sin \frac{\theta}{2}$.

5) _____

A) $\frac{\sqrt{8 - 2\sqrt{15}}}{4}$

B) $\frac{\sqrt{10}}{4}$

C) $\frac{\sqrt{6}}{4}$

D) $\frac{\sqrt{8 + 2\sqrt{15}}}{4}$

Solve the equation on the interval $0 \leq \theta < 2\pi$.

6) $4 \sin^2 \theta - 3 = 0$

6) _____

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

B) $\frac{\pi}{3}, \frac{2\pi}{3}, \frac{4\pi}{3}, \frac{5\pi}{3}$

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

D) $\frac{\pi}{6}, \frac{5\pi}{6}, \frac{7\pi}{6}, \frac{11\pi}{6}$

7) $\sqrt{2} \cos(2\theta) = 1$

A) $0, \frac{2\pi}{3}, \pi, \frac{4\pi}{3}$

C) $\frac{\pi}{8}, \frac{7\pi}{8}, \frac{9\pi}{8}, \frac{15\pi}{8}$

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

D) No solution

7) _____

8) $2 \sin^2 \theta - 3 \sin \theta - 2 = 0$

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

B) $\frac{7\pi}{6}, \frac{11\pi}{6}$

C) $\frac{\pi}{2}, \frac{5\pi}{6}, \frac{7\pi}{6}$

D) $\frac{\pi}{2}, \frac{7\pi}{6}, \frac{11\pi}{6}$

8) _____

9) $\sin^2 \theta - \cos^2 \theta = 0$

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

9) _____

Solve the problem.

10) A radio transmission tower is 220 feet tall. How long should a guy wire be if it is to be attached 6 feet from the top and is to make an angle of 30° with the ground? Give your answer to the nearest tenth of a foot.

10) _____

A) 247.1 ft

B) 440.0 ft

C) 428.0 ft

D) 254.0 ft

11) An airplane is sighted at the same time by two ground observers who are 5 miles apart and both directly west of the airplane. They report the angles of elevation as 11° and 25° . How high is the airplane?

11) _____

A) 1.67 mi

B) 0.95 mi

C) 2.11 mi

D) 3.69 mi

12) A famous golfer tees off on a long, straight 462 yard par 4 and slices his drive 11° to the right of the line from tee to the hole. If the drive went 279 yards, how many yards will the golfer's second shot have to be to reach the hole?

12) _____

A) 737.8 yd

B) 195.5 yd

C) 405.9 yd

D) 646.4 yd