

Quiz 10: Solving Trigonometric Equations, Pythagorean Identity, and Verifying Trig Identities

There's a Ghost in My Calculator

Cthulhu Lemon

1. Solve the following for θ , in radians, where $0 < \theta < 2\pi$:

$$-5 \sin^2(\theta) + 4 \sin(\theta) + 5 = 0$$

Round to the nearest hundredth.

2. Determine the exact value of θ in the following equation if $0 < \theta < 2\pi$:

$$8 \sin^2(\theta) + 8 = 16$$

Enter your answers in radians separated by commas.

3. If $-\pi < \theta < \pi$, find all values of θ that satisfy the equation:

$$4 \tan^2(\theta) = 4 \tan(\theta)$$

Separate multiple answers with a comma.

4. **Given that $\sec(\theta) = \frac{\sqrt{13}}{3}$ and θ is in Quadrant IV, what is $\tan(\theta)$? Write your answer in exact form. Do not round.**

5. **Which of the following is equivalent to $\frac{(1+\cos \alpha)(1-\cos \alpha)}{\sin^3 \alpha}$ for all values of α for which it is defined?**

- ☐ $\sec \alpha \tan \alpha$
- ☐ 1
- ☐ $\csc \alpha$
- ☐ $\cos^2 \alpha$
- ☐ $\sin \alpha$

6. **Solve the equation below for θ , where $0 < \theta < 2\pi$:**

$$-8 \sin^2(\theta) - 4 = -10$$

Enter your answer in radians and separate multiple answers with a comma.

7. Solve the following for θ , in radians, where $0 < \theta < 2\pi$:

$$-7 \sin^2(\theta) + 4 \sin(\theta) + 7 = 0$$

Round your answers to two decimal places.

8. Solve the following for θ , in radians, where $0 < \theta < 2\pi$:

$$-5 \cos^2(\theta) + 4 \cos(\theta) + 6 = 0$$

Round your answers to the nearest hundredth of a radian.

9. **Given that** $\sec(\theta) = \frac{\sqrt{221}}{11}$ **and** θ **is in Quadrant IV, what is** $\tan(\theta)$? *Give an exact answer in the form of a fraction.*

10. Solve the equation below given that $-\pi \leq \beta < \pi$:

$$4 \tan^2 \beta + 4 \tan \beta = 0$$

Separate multiple answers with commas.