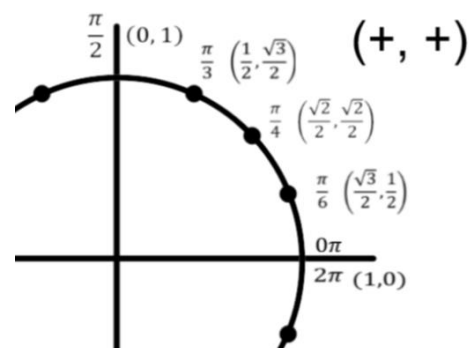


Write your questions
and thoughts here!

Pythagorean Identities

Unit circle



Reciprocal Pythagorean Identities

$$\sin^2 x + \cos^2 x = 1$$

$$\sin^2 x + \cos^2 x = 1$$

Use trig identities to write each expression in terms of a single trig identity.

$$\tan x \cos x$$

$$\frac{1 - \cos^2 x}{\cos^2 x}$$

$$\frac{\cos^2 x + \sin^2 x}{\sin x \sec x}$$

Tips:

1. Rewrite in $\sin x$ and $\cos x$
2. Squared trig functions could be Pythagorean Identity
3. Put in terms of one trig function

Write your questions
and thoughts here!



Use trig identities to solve the trig equations for $0 \leq x \leq 2\pi$. Find exact values.

$$1 = \sec^2 x + \tan x$$

$$1 - \sin^2 x + \cos^2 x = 2$$

3.12A Equivalent Representations of Trig Functions

AP Precalculus

3.12A Practice

Use trig identities to write each expression in terms of a single trig identity.

1. $\cot x \sin x$

2. $\frac{1 - \sin^2 x}{\sin^2 x}$

3. $\sin^2 x + \cos^2 x + \tan^2 x$

4. $\sin \theta \sec \theta$

5. $\frac{\sec^2 x - 1}{\sin^2 x}$

6. $\cot^2 \theta (1 - \cos^2 \theta)$

Use trig identities to solve the trig equations for $0 \leq x \leq 2\pi$. Find exact values.

7. $\sin^2 x - \cos x = 1$

8. $2 \cos x \tan x = 1$

9. $\sec^2 x + \tan^2 x = 1$

10. $\sin^3 x (1 + \cot^2 x) = 1$

11. $\frac{\cos x}{\sec x} = \frac{3}{4}$

12. $(1 - \sin^2 x) \sec x = \frac{\sqrt{2}}{2}$

13. The function f is given by $f(x) = \frac{\csc^2 x}{\sec^2 x}$. Which of the following expressions is equivalent to $f(x)$?
- (A) $\cos^2 x$
 - (B) $\tan^2 x$
 - (C) $\sin^2 x$
 - (D) $\cot^2 x$
14. The function f is given by $f(\theta) = \frac{\csc \theta \cot \theta \sin \theta}{\cos \theta}$. Which of the following expressions is equivalent to $f(\theta)$?
- (A) $\csc \theta$
 - (B) $\sin \theta$
 - (C) $\sec \theta$
 - (D) $\tan \theta$
15. The function g is defined by $g(x) = \csc^2 x + \cot x$. What are all solutions to $g(x) = 1$ on the interval $0 \leq x \leq 2\pi$?
- (A) $x = \frac{\pi}{2}$ and $\frac{3\pi}{2}$
 - (B) $x = \frac{\pi}{4}, \frac{\pi}{2}, \frac{3\pi}{2}, \frac{5\pi}{4}$
 - (C) $x = \frac{\pi}{2}, \frac{3\pi}{4}, \frac{3\pi}{2}, \frac{7\pi}{4}$
 - (D) $x = \frac{\pi}{2}$
16. The function g is given by $g(x) = \frac{1 - \cos^2 x}{\cos^2 x} + 1$. Which of the following expressions is equivalent to $g(x)$?
- (A) $\cot^2 x$
 - (B) $\tan^2 x$
 - (C) $\csc^2 x$
 - (D) $\sec^2 x$