High School Functions Playlist: The Pythagorean Identity and Other Relationships Between Trigonometric Functions

Aligns with *CCSS.MATH.CONTENT.HSF.TF.C.8:* Prove the Pythagorean identity $\sin^2(\theta)+\cos^2(\theta)=1$ and use it to find $\sin(\theta)$, $\cos(\theta)$, or $\tan(\theta)$ given $\sin(\theta)$, $\cos(\theta)$, or $\tan(\theta)$ and the quadrant of the angle.

Related Standards

- *CCSS.MATH.CONTENT.HSF.TF.C.9:* Prove the addition and subtraction formulas for sine, cosine, and tangent and use them to solve problems.

Objectives

In this module, you will learn and practice the following skills:

- Proving the Pythagorean Identity

- Given the value of $\sin(\theta)$, $\cos(\theta)$, or $\tan(\theta)$ and the quadrant of the angle, finding the value of the other two trigonometric functions

Let's get started!

Key Terms

- For any angle θ, the values of $\sin(\theta)$ and $\cos(\theta)$ are related by the **Pythagorean Identity**, $\sin^2(\theta) + \cos^2(\theta) = 1$.

Connections

- https://openstaxcollege.org/textbooks/algebra-and-trigonometry; section 7.3