# Essential Question: Proofs (

How do I prove trig expressions are equivalent?

Before...

 $\cos x \tan x$  to  $\sin x$ 

Now..

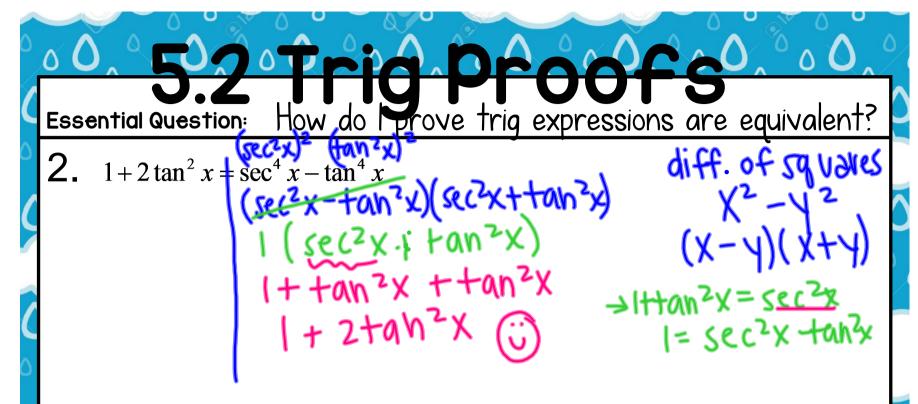
 $\cos x \tan x = \sin x$ 

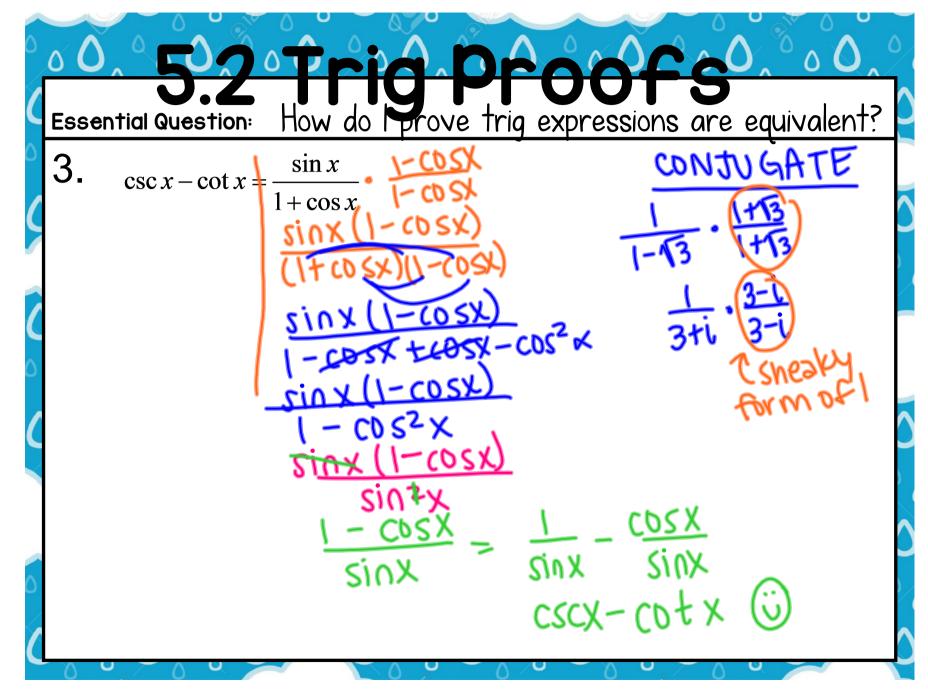
### 5.2 Trid Proofs

Essential Question: How do Prove trig expressions are equivalent?

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

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





## 5.2 Trid Proofs

### Essential Question: How do Prove trig expressions are equivalent?

#### **Helpful techniques:**

- Pick the side you wish to work on and write it down. It is usually easiest to start with the more complicated side.
- · Look for algebraic things to do:
  - o If there are two terms and you want only one:
    - a.) add fractions
    - b.) factor something out
  - o Multiply by a clever form of 1:
    - a.) to multiply a numerator or denominator by its conjugate
    - b.) to get a desired expression in the numerator or denominator
  - Do any obvious algebra or arithmetic such as distributing, squaring, or multiplying polynomials
- · Look for trigonometric things to do:
  - Search for familiar trigonometric expressions like

$$1-\cos^2 x$$
,  $\cos x \cdot \sec x$ , or  $\frac{\sin x}{\cos x}$ .

- If there are squares of functions, think of Pythagorean properties.
- Reduce the number of different functions, transforming them to the ones you want in your answer.
- Keep looking at the answer to make sure you are headed in the right direction.