

Statements

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

$$\frac{\tan^2 x}{\sec^2 x} = \tan^2 x \cdot \frac{1}{\sec^2 x}$$

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

$$\frac{\sin^2 x}{\cos^2 x} \cdot \frac{\cos^2 x}{1}$$

$$\sin^2 x = \sin^2 x$$

Given

Trig (Py Id)
Alg (Product/Explain)
Trig Quotient

Trig (Reciprocal)

Alg (multiple Id)

Statements

$$2. \sec x + \tan x = \frac{\cos x}{1 - \sin x}$$

$$\frac{1}{\cos x} + \frac{\sin x}{1} =$$

$$\frac{1}{\cos x} + \frac{\sin x}{\cos x} =$$

$$\frac{1 + \sin x}{\cos x} =$$

$$\frac{(1 + \sin x)(1 - \sin x)}{\cos x (1 - \sin x)} =$$

$$\frac{1 - \sin^2 x}{\cos x (1 - \sin x)} =$$

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

$$\frac{\cos x}{1 - \sin x} =$$

Reasons (these can be as easy as alg and trig)

Given

Trig (Reciprocal)

Trig (Quotient)

Alg (Fraction)

Alg (Multiple Id)

Alg (DOTS)

Trig (Py Id)

Alg (Exponent)

Statements	Reasons (these can be as easy as alg and trig)
<p>3. $\sin x(\cot x + \tan x) = \sec x$</p> $\sin x \left(\frac{\cos x}{\sin x} + \frac{\sin x}{\cos x} \right)$ $\frac{\sin x \cos x}{\sin x} + \frac{\sin^2 x}{\cos x}$ $\frac{\cos x}{1} + \frac{\sin^2 x}{\cos x}$ $\frac{\cos x \cdot \cos x}{\cos x} + \frac{\sin^2 x}{\cos x}$ $\frac{\cos^2 x}{\cos x} + \frac{\sin^2 x}{\cos x}$ $\frac{1}{\cos x}$ $\sec x = \sec x$	<p>Given</p> <p>Trig (Quotient)</p> <p>Alg (Distributive Prop)</p> <p>Alg (Exponent)</p> <p>Alg (Mult. Id)</p> <p>Alg (exponent Law)</p> <p>Trig [Pythagorean]</p> <p>Trig [Reciprocal]</p>

Statements	Reasons (these can be as easy as alg and trig)
<p>4. $\frac{1}{1-\sin x} + \frac{1}{1+\sin x} = 2\sec^2 x$</p> $\frac{1}{1-\sin x} \cdot \frac{1+\sin x}{1+\sin x} + \frac{1}{1+\sin x} \cdot \frac{1-\sin x}{1-\sin x}$ $\frac{1+\sin x}{1-\sin^2 x} + \frac{1-\sin x}{1-\sin^2 x}$ $\frac{1+\sin x + 1-\sin x}{1-\sin^2 x}$ $\frac{2}{1-\sin^2 x}$ $\frac{2}{\cos^2 x}$ $2\sec^2 x$	<p>Given</p> <p>Alg (Mult Id)</p> <p>Alg DOTS</p> <p>Alg (Fraction)</p> <p>Alg (Like terms)</p> <p>Trig (Py Id)</p> <p>Trig (Reciprocal)</p>

Statements

$$5. \frac{\cot^2 x}{\csc x} = \cos x (\csc^2 x - 1)$$

$$\frac{(\cot^2 x)}{\csc x}$$

$$\frac{\cot^2 x}{1} \cdot \frac{1}{\csc x} = \frac{(\cot^2 x)}{1}$$

$$\frac{\cos x}{\sin x} \cdot \frac{1}{\csc x} (\cot^2 x)$$

$$\frac{\cos x}{\sin x} \cdot \frac{\sin x}{1} (\cot^2 x)$$

$$\cos x (\cot^2 x)$$

$$\cos x (\csc^2 x - 1)$$

Reasons (these can be as easy as alg and trig)

Given

Alg (Exponent Law)

Alg [Products/Explain]

Trig (Quotient)

Trig Reciprocal

alg Multipl. Id

Trig Pyth

Statements

$$6. \csc^2\left(\frac{\pi}{2} - x\right) + \cot^2(-x) = 1$$

typo

Reasons (these can be as easy as alg and trig)

Given

Statements	Reasons (these can be as easy as alg and trig)
<p>7. $\frac{\sec x - \tan x}{\cos x \cot x} = 1$</p> <p>$\frac{\sec x \cdot \frac{1}{\cos x} - \frac{\tan x}{1} \cdot \frac{1}{\cot x}}{1} = 1$</p> <p>$\sec x \cdot \sec x - \tan x \cdot \tan x$</p> <p>$\sec^2 x - \tan^2 x$</p> <p>$1 = 1$</p>	<p>Given</p> <p>Alg (Products)</p> <p>Trig (Reciprocals)</p> <p>Alg (Expand)</p> <p>Trig (Py Id)</p>
Statements	Reasons (these can be as easy as alg and trig)
<p>8. $\frac{\cos x \sin^2 x + \cos^3 x}{\sin x} = \cot x$</p> <p>$\frac{\cos x (\sin^2 x + \cos^2 x)}{\sin x}$</p> <p>$\frac{\cos x}{\sin x} \cdot \frac{(\sin^2 x + \cos^2 x)}{1}$</p> <p>$\cot x \cdot (\sin^2 x + \cos^2 x)$</p> <p>$\cot(x) = 1$</p>	<p>Given</p> <p>Alg (Dist. Def. Prop)</p> <p>Alg (Dist. Prop)</p> <p>Trig (Reciprocal)</p> <p>Trig (Py Id)</p>