PRE-CALCULUS · CLASSWORK

Verify an Identity Using Pythagorean Identities

SCORE / 25

01 Part A · Practice

Look for $1 - \sin^2$, $1 - \cos^2$, $\sec^2 - 1$, $1 + \tan^2$, $1 + \cot^2$ and replace them; sometimes split $\sin^2 = 1 - \cos^2$ to match the other side.

EXAMPLE

Verify $\cos^2\theta(1 + \tan^2\theta) = 1$**.**

1. $1 + \tan^2\theta = \sec^2\theta$: $= \cos^2\theta \sec^2\theta$.
2. $= \cos^2\theta \cdot \dfrac{1}{\cos^2\theta}$.
3. $= 1$ ✓

1 ●○○ Verify $(\sec t - 1)(\sec t + 1) = \tan^2 t$.

Step 1: $= \sec^2 t - 1$

Step 2: $= \tan^2 t$

What justifies Step 2?

2 ●○○ Verify $(\sin\theta + \cos\theta)^2 = 1 + 2\sin\theta\cos\theta$.

Step 1: $= \sin^2\theta + 2\sin\theta\cos\theta + \cos^2\theta$

Write Step 2. Move: Pythagorean identity.

3 ●○○ Simplify $(\sec\theta - 1)(\sec\theta + 1)$ in terms of $\tan\theta$ only.

4 ●○○ Simplify $\tan^2 t - \sin^2 t$ in terms of $\tan t$ and $\sin t$ only.

5 ●○○ Verify $\sin^2 x - \cos^2 x = 1 - 2\cos^2 x$.

Step 1: $= (1 - \cos^2 x) - \cos^2 x$

Step 2: $= 1 - 2\cos^2 x$

What justifies Step 2?

6 ●○○ Verify $\dfrac{1 + \cot^2 x}{\csc x} = \csc x$.

Write Step 1. Move: Pythagorean identity.

© 2026 Math Teacher Prints · 5-2b Classwork · Regular

Preview - the full worksheet and its answer key are at primeworksheet.com