

No Pain, No Gain. Pre Cal Honors 7 1 Part II #5

Lesson 226 | Precalculus | Fundamental trigonometric identities

<https://www.youtube.com/watch?v=dB6gWtwjVXs>

Related review: exact coverage needs teacher confirmation.

Name: _____ Date: _____ Show your reasoning.

01

Simplify $12(1 - \cos^2 \theta) + 48\sin^2 \theta$ and name the identity.

02

Prove that $63(\sec^2 \theta - 1)/\tan \theta = 63\tan \theta$. State where the original expression is defined.

03

Prove that $126(\sec^2 \theta - 1)/\tan \theta = 126\tan \theta$. State where the original expression is defined.

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04

Simplify $9(1 - \cos^2 \theta) + 72\sin^2 \theta$ and name the identity.

05

Prove that $30(\sec^2 \theta - 1)/\tan \theta = 30\tan \theta$. State where the original expression is defined.

06

Prove that $18(\sec^2 \theta - 1)/\tan \theta = 18\tan \theta$. State where the original expression is defined.

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01

Simplify $12(1-\cos^2 \theta) + 48\sin^2 \theta$ and name the identity.

Use $1-\cos^2 \theta = \sin^2 \theta$. Result $(12+48)\sin^2 \theta = 60\sin^2 \theta$; valid for every real θ .

02

Prove that $63(\sec^2 \theta - 1)/\tan \theta = 63\tan \theta$. State where the original expression is defined.

$\sec^2 \theta - 1 = \tan^2 \theta$. For $\tan \theta \neq 0$, $63\tan^2 \theta / \tan \theta = 63\tan \theta$. Require $\cos \theta \neq 0$ and $\sin \theta \neq 0$; excluded angles remain excluded.

03

Prove that $126(\sec^2 \theta - 1)/\tan \theta = 126\tan \theta$. State where the original expression is defined.

$\sec^2 \theta - 1 = \tan^2 \theta$. For $\tan \theta \neq 0$, $126\tan^2 \theta / \tan \theta = 126\tan \theta$. Require $\cos \theta \neq 0$ and $\sin \theta \neq 0$; excluded angles remain excluded.

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04

Simplify $9(1-\cos^2 \theta) + 72\sin^2 \theta$ and name the identity.

Use $1-\cos^2 \theta = \sin^2 \theta$. Result $(9+72)\sin^2 \theta = 81\sin^2 \theta$; valid for every real θ .

05

Prove that $30(\sec^2 \theta - 1)/\tan \theta = 30\tan \theta$. State where the original expression is defined.

$\sec^2 \theta - 1 = \tan^2 \theta$. For $\tan \theta \neq 0$, $30\tan^2 \theta / \tan \theta = 30\tan \theta$. Require $\cos \theta \neq 0$ and $\sin \theta \neq 0$; excluded angles remain excluded.

06

Prove that $18(\sec^2 \theta - 1)/\tan \theta = 18\tan \theta$. State where the original expression is defined.

$\sec^2 \theta - 1 = \tan^2 \theta$. For $\tan \theta \neq 0$, $18\tan^2 \theta / \tan \theta = 18\tan \theta$. Require $\cos \theta \neq 0$ and $\sin \theta \neq 0$; excluded angles remain excluded.