

The Heart and Soul of the Trigonometric Identities Students Must Know

Lesson 159 | Trigonometry | Fundamental trigonometric identities

<https://www.youtube.com/watch?v=0AhCNuVMlyQ>

Original practice aligned to the saved video title.

Name: _____ Date: _____ Show your reasoning.

01

Simplify $10(1 - \cos^2 \theta) + 130\sin^2 \theta$ and name the identity.

02

Prove that $66(\sec^2 \theta - 1)/\tan \theta = 66\tan \theta$. State where the original expression is defined.

03

Prove that $27(\sec^2 \theta - 1)/\tan \theta = 27\tan \theta$. State where the original expression is defined.

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04

Simplify $9(1 - \cos^2 \theta) + 126\sin^2 \theta$ and name the identity.

05

Prove that $91(\sec^2 \theta - 1)/\tan \theta = 91\tan \theta$. State where the original expression is defined.

06

Prove that $99(\sec^2 \theta - 1)/\tan \theta = 99\tan \theta$. State where the original expression is defined.

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01

Simplify $10(1 - \cos^2 \theta) + 130\sin^2 \theta$ and name the identity.

Use $1 - \cos^2 \theta = \sin^2 \theta$. Result $(10 + 130)\sin^2 \theta = 140\sin^2 \theta$; valid for every real θ .

02

Prove that $66(\sec^2 \theta - 1)/\tan \theta = 66\tan \theta$. State where the original expression is defined.

$\sec^2 \theta - 1 = \tan^2 \theta$. For $\tan \theta \neq 0$, $66\tan^2 \theta / \tan \theta = 66\tan \theta$. Require $\cos \theta \neq 0$ and $\sin \theta \neq 0$; excluded angles remain excluded.

03

Prove that $27(\sec^2 \theta - 1)/\tan \theta = 27\tan \theta$. State where the original expression is defined.

$\sec^2 \theta - 1 = \tan^2 \theta$. For $\tan \theta \neq 0$, $27\tan^2 \theta / \tan \theta = 27\tan \theta$. Require $\cos \theta \neq 0$ and $\sin \theta \neq 0$; excluded angles remain excluded.

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04

Simplify $9(1-\cos^2 \theta)+126\sin^2 \theta$ and name the identity.

Use $1-\cos^2 \theta=\sin^2 \theta$. Result $(9+126)\sin^2 \theta=135\sin^2 \theta$; valid for every real θ .

05

Prove that $91(\sec^2 \theta - 1)/\tan \theta = 91\tan \theta$. State where the original expression is defined.

$\sec^2 \theta - 1 = \tan^2 \theta$. For $\tan \theta \neq 0$, $91\tan^2 \theta/\tan \theta = 91\tan \theta$. Require $\cos \theta \neq 0$ and $\sin \theta \neq 0$; excluded angles remain excluded.

06

Prove that $99(\sec^2 \theta - 1)/\tan \theta = 99\tan \theta$. State where the original expression is defined.

$\sec^2 \theta - 1 = \tan^2 \theta$. For $\tan \theta \neq 0$, $99\tan^2 \theta/\tan \theta = 99\tan \theta$. Require $\cos \theta \neq 0$ and $\sin \theta \neq 0$; excluded angles remain excluded.