

Proving Basic Trigonometric Identities

Lesson 173 | Trigonometry | Fundamental trigonometric identities

https://www.youtube.com/watch?v=_8Wz73iDWSI

Original practice aligned to the saved video title.

Name: _____ Date: _____ Show your reasoning.

01

Simplify $13(1 - \cos^2 \theta) + 78\sin^2 \theta$ and name the identity.

02

Prove that $40(\sec^2 \theta - 1)/\tan \theta = 40\tan \theta$. State where the original expression is defined.

03

Prove that $60(\sec^2 \theta - 1)/\tan \theta = 60\tan \theta$. State where the original expression is defined.

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04

Simplify $12(1 - \cos^2 \theta) + 96\sin^2 \theta$ and name the identity.

05

Prove that $80(\sec^2 \theta - 1)/\tan \theta = 80\tan \theta$. State where the original expression is defined.

06

Prove that $90(\sec^2 \theta - 1)/\tan \theta = 90\tan \theta$. State where the original expression is defined.

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01

Simplify $13(1 - \cos^2 \theta) + 78\sin^2 \theta$ and name the identity.

Use $1 - \cos^2 \theta = \sin^2 \theta$. Result $(13 + 78)\sin^2 \theta = 91\sin^2 \theta$; valid for every real θ .

02

Prove that $40(\sec^2 \theta - 1)/\tan \theta = 40\tan \theta$. State where the original expression is defined.

$\sec^2 \theta - 1 = \tan^2 \theta$. For $\tan \theta \neq 0$, $40\tan^2 \theta / \tan \theta = 40\tan \theta$. Require $\cos \theta \neq 0$ and $\sin \theta \neq 0$; excluded angles remain excluded.

03

Prove that $60(\sec^2 \theta - 1)/\tan \theta = 60\tan \theta$. State where the original expression is defined.

$\sec^2 \theta - 1 = \tan^2 \theta$. For $\tan \theta \neq 0$, $60\tan^2 \theta / \tan \theta = 60\tan \theta$. Require $\cos \theta \neq 0$ and $\sin \theta \neq 0$; excluded angles remain excluded.

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04

Simplify $12(1 - \cos^2 \theta) + 96\sin^2 \theta$ and name the identity.

Use $1 - \cos^2 \theta = \sin^2 \theta$. Result $(12 + 96)\sin^2 \theta = 108\sin^2 \theta$; valid for every real θ .

05

Prove that $80(\sec^2 \theta - 1)/\tan \theta = 80\tan \theta$. State where the original expression is defined.

$\sec^2 \theta - 1 = \tan^2 \theta$. For $\tan \theta \neq 0$, $80\tan^2 \theta / \tan \theta = 80\tan \theta$. Require $\cos \theta \neq 0$ and $\sin \theta \neq 0$; excluded angles remain excluded.

06

Prove that $90(\sec^2 \theta - 1)/\tan \theta = 90\tan \theta$. State where the original expression is defined.

$\sec^2 \theta - 1 = \tan^2 \theta$. For $\tan \theta \neq 0$, $90\tan^2 \theta / \tan \theta = 90\tan \theta$. Require $\cos \theta \neq 0$ and $\sin \theta \neq 0$; excluded angles remain excluded.