Proof: Trigonometric identities

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Explanations as to why certain trigonometric identities are true.

*Before reading this proof sheet, it is recommended that you read* [*Guide: Trigonometric identities (degrees)*](../studyguides/trigonometricidentities-degrees.qmd) *or* [*Guide: Trigonometric identities (radians)*](../studyguides/trigonometricidentities-radians.qmd)*.*

# Proof of Pythagorean identities

Remember from [Guide: Trigonometric identities (degrees)](../studyguides/trigonometricidentities-degrees.qmd) or [Guide: Trigonometric identities (radians)](../studyguides/trigonometricidentities-radians.qmd) that the **Pythagorean identities** are:

|  |  |
| --- | --- |
|  | **Proof of**  You know from [Guide: Trigonometry (degrees)](../studyguides/trigonometry-degrees.qmd) or [Guide: Trigonometry (radians)](../studyguides/trigonometry-radians.qmd) that  You can shorten these to for opposite, for adjacent and for hypotenuse. Rearranging gives and .  From Pythagoras’ Theorem, you also know that .  Replacing and with the expressions above, you get  Using the laws of indices (see [Guide: Laws of indices](../studyguides/lawsofindices.qmd)), and using the standard notation and you can write  Divide everything by the non-zero to get:  Therefore . |

# Proof of sum identities

# Further reading

[Guide: Trigonometric identities (degrees)](../studyguides/trigonometricidentities-degrees.qmd)

[Questions: Trigonometric identities (degrees)](../questions/qs-trigonometricidentities-degrees.qmd)

## Version history

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