

**20 19** Prove that $\sec \theta - \cos \theta = \sin \theta \tan \theta$
MA**2**

$$\begin{aligned}\text{LHS} &= \sec \theta - \cos \theta \\ &= \frac{1}{\cos \theta} - \cos \theta \\ &= \frac{1 - \cos^2 \theta}{\cos \theta} \quad \checkmark \\ &= \frac{\sin^2 \theta}{\cos \theta} \\ &= \sin \theta \times \frac{\sin \theta}{\cos \theta} \\ &= \sin \theta \tan \theta \\ &= \text{RHS} \quad \checkmark\end{aligned}$$

State Mean:
1.19/2**HSC Marking Feedback**Looking for **Mathematics Advanced** Topic Revision?Go to our [MathsFit](#) page for downloads @ \$2.95 each**Students should:**

- use the Reference Sheet to find the trigonometric identities
- work from the left-hand side to prove the right-hand side or vice versa
- set out their work clearly and logically
- identify the trigonometric relationship used, for example, $1 - \cos^2 \theta = \sin^2 \theta$
- manipulate fractions carefully.

In better responses, students were able to:

- identify the trigonometric relationships involved in the question, including the inverse trigonometric relationships
- establish a common denominator
- set out their work and simplify correctly
- use clear techniques to provided correct solution
- demonstrate a strong understanding of manipulating fractions and common denominators.

Areas for students to improve include:

- practising the manipulation of fractions involving trigonometric identities
- showing each step when rearranging trigonometric functions
- practising working with an expression on the left-hand side of an equation to prove that it equals the right-hand side
- understanding the difference between a trigonometric identity proof and a trigonometric equation.

* These solutions have been provided by [projectmaths](#) and are not supplied or endorsed by NESA.