Prove trigonometric identities and apply them to problems

Key skills | Free preview

Learning target: Prove trigonometric identities and apply them to problems.

An identity is true for every value where both sides are defined. Start from established formulas, retain excluded values and transform expressions with justified steps. Auxiliary-angle forms combine a sine and cosine into one sinusoid, while product/sum identities reorganise frequencies and can simplify equations or integrals.

Try the mathematics

Task 1. Derive $\sec^2 x = 1 + \tan^2 x$ from $\sin^2 x + \cos^2 x = 1$, stating the restriction. Use the addition formula to derive $\sin(2x)$, then express $\sin(3x)\cos x$ as a sum.

Continue with the full worksheet

The complete resource has 2 focused task sets and substantive worked solutions. Use an exercise book or print the A4 worksheet. This preview shows the first task without its full solution.

Find this resource: https://resources.aspiretopowerlearning.com.au/vce/skills/sm-u2-o1-ks-03/

Study-design reference

VCE Mathematics Study Design 2023-2027, version 1.1 (November 2022). Specialist Mathematics; Unit 2; Outcome 1; Key skills; bullet 3; p. 69.

The learning target is a concise paraphrase. Aspire reference: sm-u2-o1-ks-03. This is an internal identifier, not an official VCAA code.

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