Trigonometric identities and geometry

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A sample from this topic. The complete topic collection contains three different resources and worked solutions.

Read the worked example, then show each step in the practice questions. Show the mathematical steps. A calculator, graphing tool or CAS may be used to check results where useful.

What you will practise

• Trigonometry

Useful starting skills: Year 10 and relevant Year 10A algebra, functions and trigonometry; concurrent Methods supports these topics.

Compound-angle identities connect trig values of sums and differences. Double-angle identities are special cases and support exact values and equation solving.

When using sine and cosine rules in space, first identify the plane triangle involved. For a circular segment, subtract the triangle from the sector; radians are required in sector formulas $r^2\theta/2$.

Worked example

Find sin 75° exactly.

Write $75°=45°+30°$

apply $\sin(a+b)=\sin a \cos b+\cos a \sin b$.

Answer: $(\sqrt{6}+\sqrt{2})/4$.

Try it yourself

Name: _____ Date: _____

1. Find cos 15° exactly.

2. Express 1-cos 2 x using sin x.

Answers and explanations

Check the method as well as the final answer. An alternative correct method is also valid.

1. $(\sqrt{6}+\sqrt{2})/4$.

Use $\cos(45°-30°)$.

2. $2\sin^2 x$.

Rearrange $\cos 2x=1-2\sin^2 x$.

Curriculum reference: Specialist Mathematics Units 1–2 — Trigonometry

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