Year 11 Mathematics Advanced

Topic: Trigonometric Identities and Equations (3 of 3)
Review Questions: Mixed one-off exam questions
Term 3, 2026

How to use this set

These are real past-paper questions on Trigonometric Identities and Equations that do not fit any one recurring pattern: genuine one-offs. They are here so you also meet the rarer, less predictable exam questions. Work through them once you are solid on the patterns in the main review docs. Every question you get wrong or struggle with goes in your **Mistakes Log**.

Mixed one-off exam questions

Q1 North Sydney Boys 2024 Trial Q29(i) · **1 mark**

Solve the equation $\sin(x + 15°) = \cos 24°$.

Q2 Caringbah 2020 Trial Q17 · **2 marks**

Solve $\left|2\cos x - 1\right| = 1$ for $0 \leq x \leq \pi$.

Q3 Fort St 2025 Trial Q17 · **2 marks**

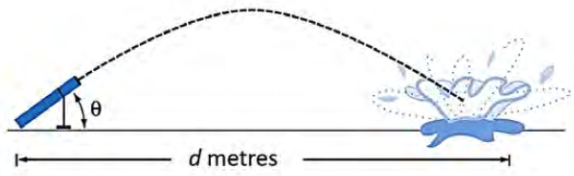
If $\sin x = \dfrac{\sqrt{5}}{5}$, $0 < x < \dfrac{\pi}{2}$, find the value of $\sin^4 x - \cos^4 x$.

Q4 Hurlstone 2023 Trial Q40 · **2 marks**

Anuva and Jaifa were playing with an air cannon. A water balloon leaves the air cannon at an angle of θ with the ground and at an initial velocity of v metres per second. The distance d metres travelled by the water balloon is given by the formula

$$d = \frac{1}{32} v^2 \sin 2\theta.$$

It is given that the initial velocity of the water balloon is 12 metres per second. At what angle/s must Anuva adjust the air cannon so that the water balloon lands on Jaifa who is standing 3 metres from the air cannon? Give your answer to the nearest degree. Assume $0° \leq \theta \leq 90°$.



Q5 Gosford 2020 Trial Q15 · **3 marks**

Solve $\left|1 - 2\cos^2 x\right| = 1$ for $0 \leq x \leq 2\pi$.