

Self-assessment: 10 Trigonometric equations and identities**1. Do not use a calculator to answer this question.**

Solve the equation $\sin 3x = \frac{1}{2}$ for $x \in [0, \pi]$.

(accessible to students on the path to grade 5 or 6) [4 marks]

2. Do not use a calculator to answer this question.

Find the exact values of x in the interval $[-\pi, \pi]$ which satisfy the equation $2\sin^2 x - \cos x = 1$.

(accessible to students on the path to grade 5 or 6) [8 marks]

3. Do not use a calculator to answer this question.

Solve the equation $\sin^2 x = \sqrt{3} \sin x \cos x$ for $0^\circ \leq x \leq 360^\circ$.

(accessible to students on the path to grade 5 or 6) [6 marks]

4. (a) Show that $\frac{1}{\cos x} - \cos x = \sin x \tan x$.

(b) Given that $\sin x - \cos x = \frac{1}{\sin x} - \frac{1}{\cos x}$,

(i) Show that $\tan x = 1$.

(ii) Hence find the value of $x \in [\pi, 2\pi]$.

(accessible to students on the path to grade 5 or 6) [12 marks]