Higher Mathematics

Trigonometric Equations - Questions

Marks are indicated in brackets after each question number

2013 Paper 1 Question 15, (2)

Solve $\tan\left(\frac{x}{2}\right) = -1$ for $0 \leq x < 2\pi$.

2013 Paper 2 Question 8, (6)

Solve algebraically the equation

$$\sin 2x = 2\cos^2 x \qquad \text{for } 0 \leq x < 2\pi$$

2014 Paper 2 Question 6, (5)

Solve the equation

$$\sin x - 2\cos 2x = 1 \qquad \text{for } 0 \leq x < 2\pi.$$

2017 Paper 2 Question 6, (5)

Solve $5\sin x - 4 = 2\cos 2x$ for $0 \leq x < 2\pi$.

2018 Paper 2 Question 6, (3)

Functions, f and g, are given by $f(x) = 3 + \cos x$ and $g(x) = 2x$, $x \in \mathbb{R}$.

(a) Find expressions for

(i) $f(g(x))$ and

(ii) $g(f(x))$.

(b) Determine the value(s) of x for which $f(g(x)) = g(f(x))$ where $0 \leq x < 2\pi$.

2019 Paper 1 Question 15, (4) (1)

(a) Solve the equation $\sin 2x° + 6\cos x° = 0$ for $0 \leq x < 360$.

(b) Hence solve $\sin 4x° + 6\cos 2x° = 0$ for $0 \leq x < 360$.

2022 Paper 1 Question 9, (5)

Solve the equation $\cos 2x° = 5\cos x° - 3$ for $0 \leq x < 360$.

2023 Paper 2 Question 7, (5)

Solve the equation $\sin x° + 2 = 3\cos 2x°$ for $0 \leq x < 360$.

2024 Paper 2 Question 12, (5)

Solve the equation $2\sin 2x° - \sin^2 x° = 0$, $0 \leq x < 360$.

2025 Paper 2 Question 11, (4)

Solve $3\sin 2x° + 4\cos x° = 0$ for $0 \leq x < 360$.

2026 Paper 2 Question 10, (5)

Solve the equation $3\cos 2x° + 10\cos x° = 1$ for $0 \leq x < 360$.