Write your name, centre number and candidate number in the boxes below.

| Surname | Other names |
|---|---|
| | |

Centre number | | | | | |

Candidate number | | | | |

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# Trigonometric graphs and equations

Time allowed: 40 minutes

**Subject code** **0580**

# Mathematics

## Questions from Paper 2 and Paper 4

**You must have:** a ruler marked in centimetres and millimetres, a protractor, compasses, a pen, an HB pencil and an eraser.
**You may use a calculator.**

Total marks

**/ 31**

### Instructions

- Answer every question in the space provided on this paper.
- Write in black or dark blue ink. Pencil may be used for diagrams and graphs.
- Fill in your name, centre number and candidate number above.
- Show your working: a correct method can earn marks even if the answer is wrong.
- Unless a question says otherwise, give answers that are not exact to 3 significant figures, and angles in degrees to 1 decimal place.

### Information

- This paper has 10 questions worth 31 marks in total.
- The marks for each question or part are shown in brackets, for example [3].

### Advice

- Read every question through once before you write anything.
- Use the marks in brackets to judge how long to spend on each part.
- If you finish early, go back and check your working.

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Print at 100% (Actual size) so diagrams keep their real measurements.

**1** When $\sin x° = 0.36$, find

**(a)** the acute angle $x°$,

..... [1]

**(b)** the obtuse angle $x°$.

..... [1]

(a) SOHCAHTOA (b) Solving trigonometric equations Click for more variations

**2** Solve the equation $\tan x = 2$ for $0° \leqslant x \leqslant 360°$.

$x =$ ..... or $x =$ ..... [2]

Solving trigonometric equations Click for more variations

**3** Find all the solutions of $4 \sin x = 3$ for $0° \leqslant x \leqslant 360°$.

..... [2]

Solving trigonometric equations Click for more variations

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**4** Solve $3\tan x = -4$ for $0° \leqslant x \leqslant 360°$.

$x =$ ..... or $x =$ ..... [3]

Solving trigonometric equations Click for more variations

**5** Solve $3(2 + \cos x) = 5$ for $0° \leqslant x \leqslant 360°$.

..... [3]

Solving trigonometric equations Click for more variations

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**6** Solve the equation $3\sin x + 3 = 1$ for $0° \leqslant x \leqslant 360°$.

$x =$ ..... or $x =$ ..... [3]

Solving trigonometric equations Click for more variations

**7** Solve $\tan x = -\frac{1}{\sqrt{3}}$ for $0° \leqslant x \leqslant 360°$.

$x =$ ..... , $x =$ ..... [3]

Solving trigonometric equations Click for more variations

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**8** **(a)** Write down the exact value of $\tan 60°$.

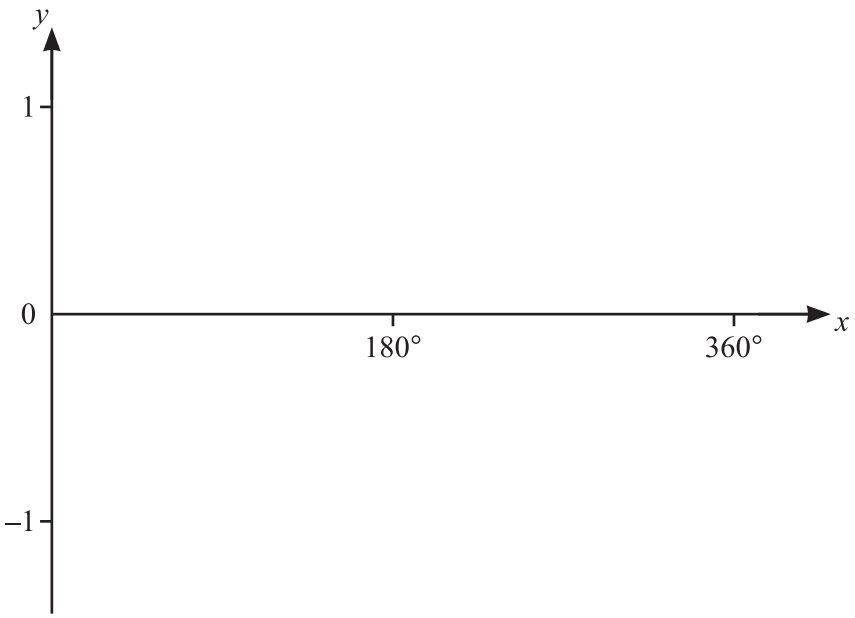
..... [1]

**(b)** Solve $2\sin x - 1 = 0$ for $0° \leqslant x \leqslant 360°$.

$x =$ ..... or $x =$ ..... [3]

(a) Exact trigonometric values (b) Solving trigonometric equations Click for more variations

**9** **(a)** Sketch the graph of $y = \cos x$ for $0° \leqslant x \leqslant 360°$.




[2]

**(b)** $\cos x° = \frac{1}{\sqrt{2}}$ and $x$ is a **reflex** angle.

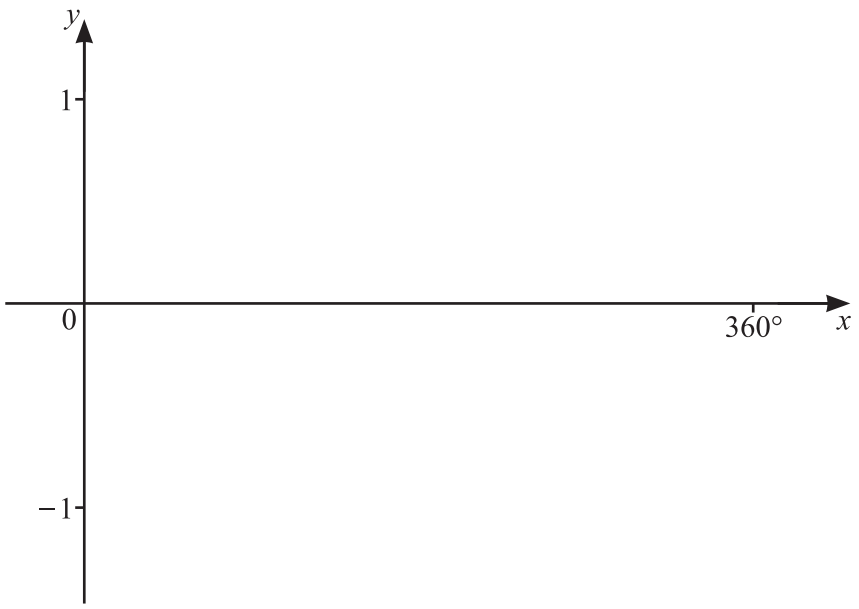
Find the value of $x$.

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$x =$ ..... [2]

(a) Trigonometric graphs (b) Solving trigonometric equations Click for more variations

**10** **(a)** Sketch the graph of $y = \sin x$ for $0° \leqslant x \leqslant 360°$.




[2]

**(b)** Solve the equation $2 + 5\sin x = 1$ for $0° \leqslant x \leqslant 360°$.

$x =$ ..... and $x =$ ..... [3]

(a) Trigonometric graphs (b) Solving trigonometric equations Click for more variations

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