UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER			

4688624680 3

CAMBRIDGE INTERNATIONAL MATHEMATICS **0607/23**

Paper 2 (Extended) **May/June 2013**

45 minutes

Candidates answer on the Question Paper.

Additional Materials: Geometrical Instruments

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name on all the work you hand in.
Write in dark blue or black pen.
Do not use staples, paper clips, highlighters, glue or correction fluid.
You may use a pencil for any diagrams or graphs.
DO **NOT** WRITE IN ANY BARCODES.

Answer **all** the questions.
CALCULATORS MUST NOT BE USED IN THIS PAPER.
All answers should be given in their simplest form.
You must show all the relevant working to gain full marks and you will be given marks for correct methods even if your answer is incorrect.
The number of marks is given in brackets [ ] at the end of each question or part question.
The total number of marks for this paper is 40.

This document consists of **8** printed pages.

Formula List

For the equation $ax^2 + bx + c = 0$ $\quad x = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

Curved surface area, A, of cylinder of radius r, height h. $\quad A = 2\pi rh$

Curved surface area, A, of cone of radius r, sloping edge l. $\quad A = \pi rl$

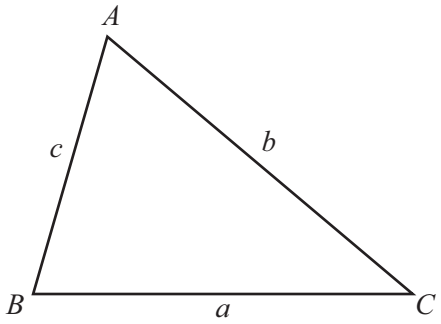
Curved surface area, A, of sphere of radius r. $\quad A = 4\pi r^2$

Volume, V, of pyramid, base area A, height h. $\quad V = \dfrac{1}{3}Ah$

Volume, V, of cylinder of radius r, height h. $\quad V = \pi r^2 h$

Volume, V, of cone of radius r, height h. $\quad V = \dfrac{1}{3}\pi r^2 h$

Volume, V, of sphere of radius r. $\quad V = \dfrac{4}{3}\pi r^3$



$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$a^2 = b^2 + c^2 - 2bc\cos A$$

$$\text{Area} = \frac{1}{2}bc\sin A$$

Answer **all** the questions.

For Examiner's Use

1 Work out $(1.6 \times 10^3) \div (4 \times 10^5)$.
Give your answer in standard form.

Answer ..... [2]

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2 Solve the equations.

(a) $2 - 3(1 - 2x) = 4(2 - x)$

Answer(a) $x =$ ..... [3]

(b) $\sin x = \pm \frac{\sqrt{3}}{2}$ for $0° \leqslant x \leqslant 360°$

Answer(b) $x =$ ..... [3]

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3 Find the value of the following.

(a) 4^0

Answer(a) ..... [1]

(b) $27^{-\frac{2}{3}}$

Answer(b) ..... [2]

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4 **(a)** Simplify.

$$\sqrt{200} - \sqrt{98}$$

Answer(a) ..... [2]

(b) Rationalise the denominator.

$$\frac{11}{5 - \sqrt{3}}$$

Answer(b) ..... [3]

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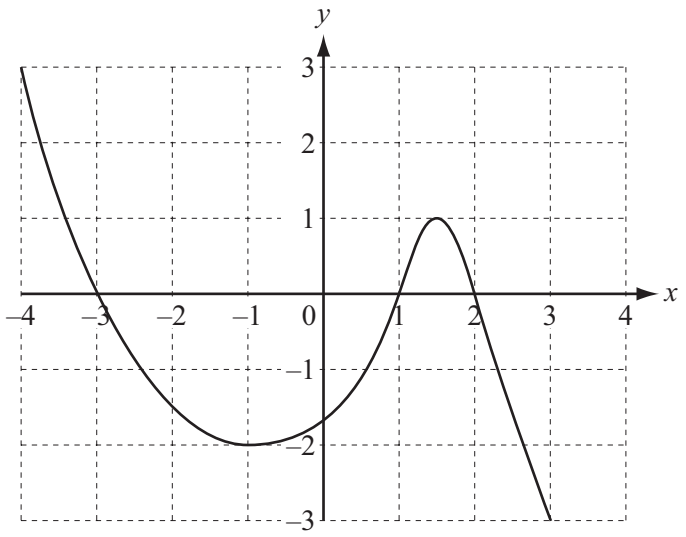
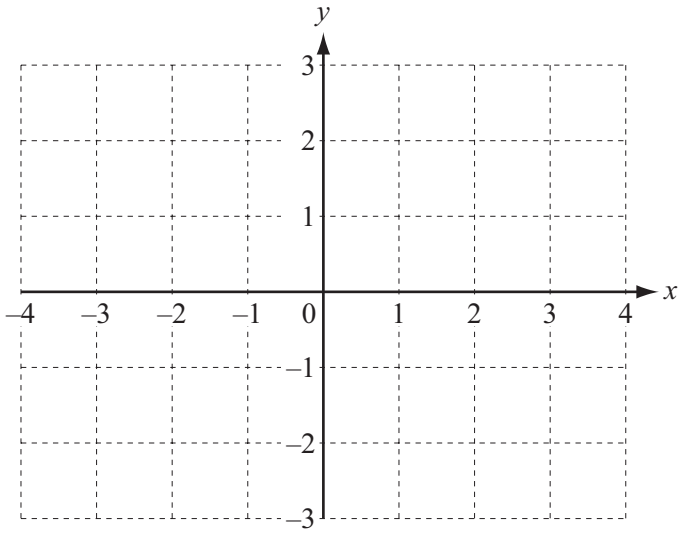
5 The diagram shows the graph of $y = f(x)$ for $-4 \leqslant x \leqslant 3$.

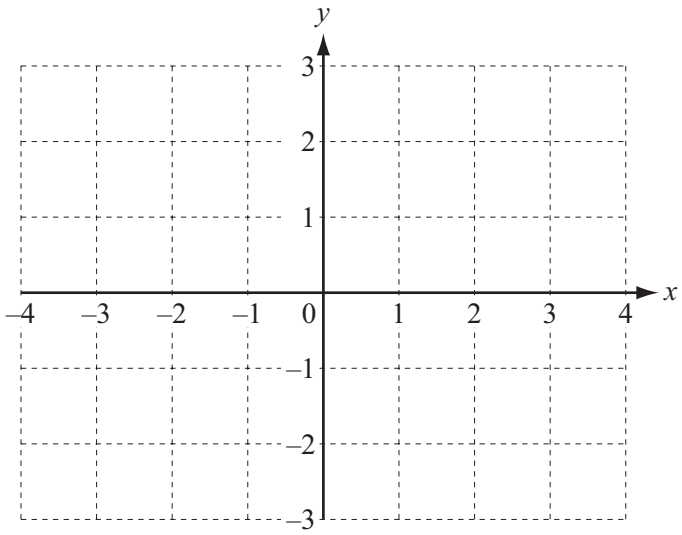


(a) On the diagram below, sketch the graph of $y = |f(x)|$.



[3]

(b) On the diagram below, sketch the graph of $y = f(x - 1)$.



[2]

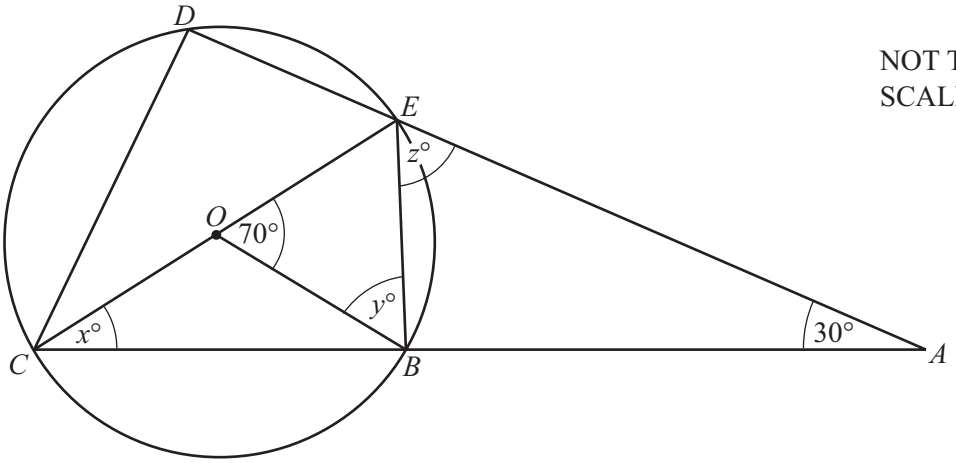
6 Make x the subject of the equation.

$$\frac{a}{x+3} = \frac{b}{x}$$

For Examiner's Use

Answer $x =$ ..... [3]

7



NOT TO SCALE

B, C, D and E lie on a circle, centre O.
CE is a diameter, angle $DAC = 30°$ and angle $BOE = 70°$.

Find the values of x, y and z.

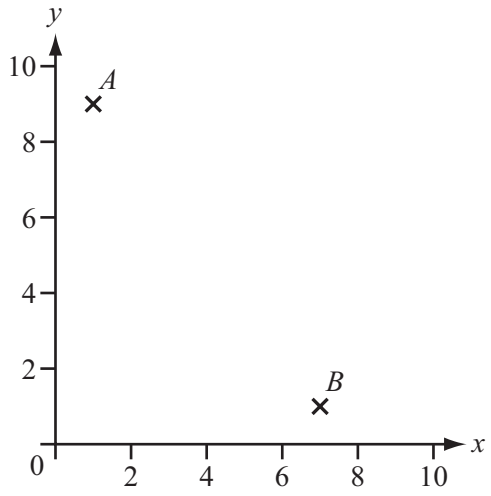
Answer $x =$ .....

$y =$ .....

$z =$ ..... [3]

For Examiner's Use

8 The points A (1, 9) and B (7, 1) are shown on the diagram below.



(a) Calculate the length AB.

Answer(a) ..... [2]

(b) (i) Find the co-ordinates of the midpoint of the line AB.

Answer(b)(i) (..... , ...) [1]

(ii) Find the equation of the perpendicular bisector of the line AB.

Answer(b)(ii) ..... [3]

Questions 9 and 10 are printed on the next page.

For Examiner's Use

9 Wendy walks 9 km in $1\frac{1}{2}$ hours.
She then runs 9 km in 45 minutes.

Find her average speed in km/h for the whole journey.

Answer ..... km/h [3]

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10 Paulo goes to a supermarket.
The probability that he buys orange juice is 0.65 .
The probability that he does not buy milk is 0.30 .
The probability that he buys milk but does not buy orange juice is 0.15 .

(a) Complete the table of probabilities.

	Buys milk	Does not buy milk	Total
Buys orange juice			0.65
Does not buy orange juice	0.15		
Total		0.30	1.00

[2]

(b) Find the probability that Paulo buys either orange juice or milk but not both.

Answer(b) ..... [2]