GradeMax

* 0000800000001 * DFD

CAMBRIDGE
International Education

Cambridge IGCSE™

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

15962047622

ADDITIONAL MATHEMATICS **0606/12**

Paper 1 Non-calculator **February/March 2026**

2 hours

You must answer on the question paper.

No additional materials are needed.

INSTRUCTIONS

- Answer **all** questions.
- Use a black or dark blue pen. You may use an HB pencil for any diagrams or graphs.
- Write your name, centre number and candidate number in the boxes at the top of the page.
- Write your answer to each question in the space provided.
- Do **not** use an erasable pen. Do **not** use correction fluid or tape.
- Do **not** write on any bar codes.
- Calculators must **not** be used in this paper.
- You must show all necessary working clearly.

INFORMATION

- The total mark for this paper is 80.
- The number of marks for each question or part question is shown in brackets [ ].

This document has **16** pages.

DC (CE/CB) 359462/1
© Cambridge University Press & Assessment 2026

[Turn over

List of formulas

Equation of a circle with centre (a, b) and radius r. $(x-a)^2+(y-b)^2=r^2$

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

Surface area, A, of sphere of radius r. $A=4\pi r^2$

Volume, V, of pyramid or cone, base area A, height h. $V=\frac{1}{3}Ah$

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

Quadratic equation

For the equation $ax^2+bx+c=0$,

$$x=\frac{-b\pm\sqrt{b^2-4ac}}{2a}$$

Binomial theorem

$$(a+b)^n=a^n+\binom{n}{1}a^{n-1}b+\binom{n}{2}a^{n-2}b^2+\ldots+\binom{n}{r}a^{n-r}b^r+\ldots+b^n,$$

where n is a positive integer and $\binom{n}{r}=\frac{n!}{(n-r)!r!}$

Arithmetic series

$$u_n=a+(n-1)d$$
$$S_n=\frac{1}{2}n(a+l)=\frac{1}{2}n\{2a+(n-1)d\}$$

Geometric series

$$u_n=ar^{n-1}$$
$$S_n=\frac{a(1-r^n)}{1-r}\quad(r\neq 1)$$
$$S_\infty=\frac{a}{1-r}\quad(|r|<1)$$

Identities

$$\sin^2A+\cos^2A=1$$
$$\sec^2A=1+\tan^2A$$
$$\operatorname{cosec}^2A=1+\cot^2A$$

Formulas for ΔABC

$$\frac{a}{\sin A}=\frac{b}{\sin B}=\frac{c}{\sin C}$$
$$a^2=b^2+c^2-2bc\cos A$$
$$\Delta=\frac{1}{2}ab\sin C$$

© Cambridge University Press & Assessment 2026

DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN

GradeMax

Calculators must **not** be used in this paper.

1 A polynomial p is given by $\mathrm{p}(x) = 4x^3 + 8x^2 - x - 2$.

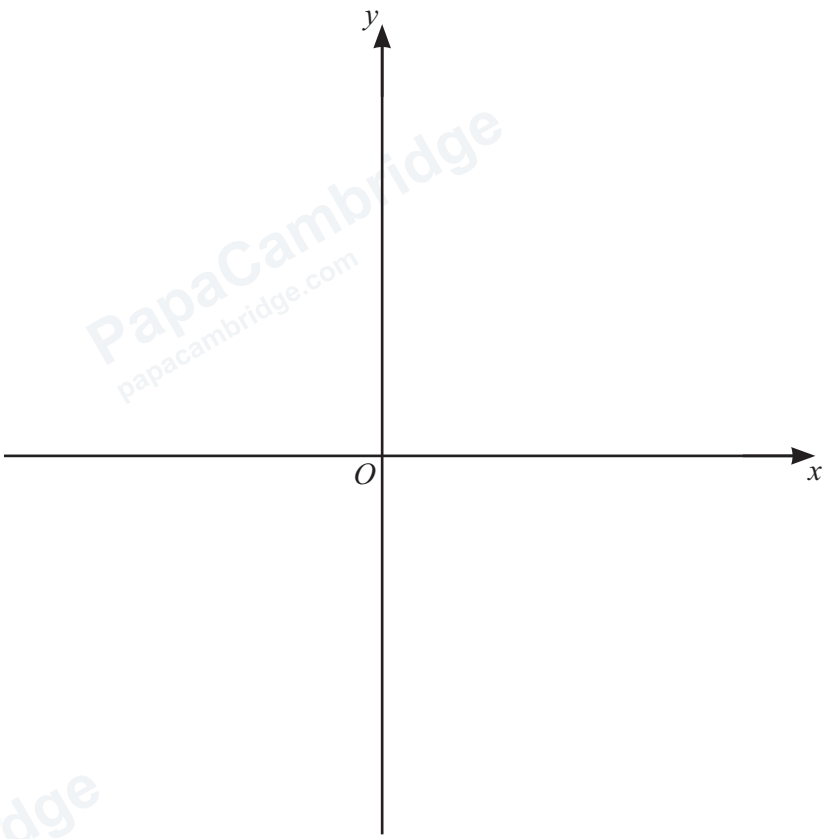
(a) Show that $x + 2$ is a factor of $\mathrm{p}(x)$. [1]

(b) Solve the equation $\mathrm{p}(x) = 0$. [3]

DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN

PapaCambridge papacambridge.com

2 **(a)** On the axes, sketch the graph of $y = |x^2 - 2x - 3|$.
State the intercepts with the coordinate axes. [4]



(b) The function g is defined by $g(x) = 4e^{x-2} - 1$ for all real x.

Find an expression for $g^{-1}(x)$. [2]

DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN

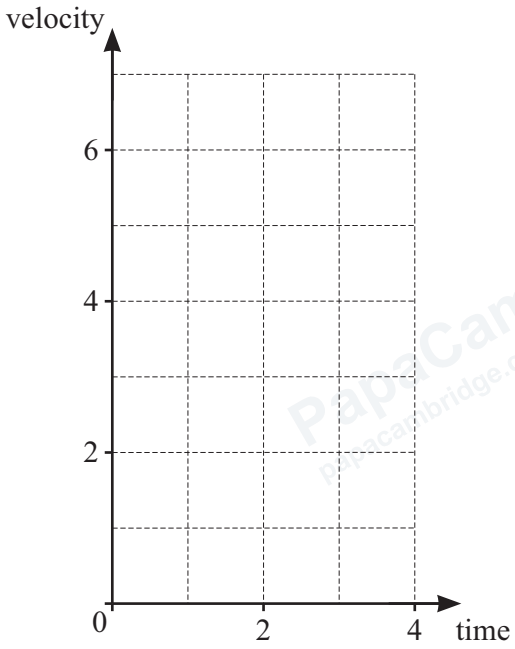
© Cambridge University Press & Assessment 2026

GradeMax

3 In this question, time t is in seconds and displacement s is in metres.

A particle starts from rest at the origin O and moves in a straight line with constant positive acceleration.
When $t = 4$, $s = 6$.

(a) Draw the velocity−time graph for $0 \leqslant t \leqslant 4$. [2]



(b) Hence find the acceleration. [1]

DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN

© Cambridge University Press & Assessment 2026

GradeMax

4 In an arithmetic progression:

- the common difference is -2
- the sum of the first 4 terms is equal to the sum of the first 10 terms.

Find the first term. [3]

DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN

© Cambridge University Press & Assessment 2026

GradeMax

5 A curve has equation $y = \frac{x^2 - 8}{3 - x}$.

P and Q are the stationary points on the curve.

Find $\frac{dy}{dx}$ and the exact length of the line PQ. [7]

DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN

© Cambridge University Press & Assessment 2026

GradeMax

6 **(a)** Solve the equation $|3x+2|=7$. [3]

(b) Solve the inequality $|2x-4|>|x+1|$. [4]

DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN

© Cambridge University Press & Assessment 2026

GradeMax

7 The variables x and y are related by $y = 3\sqrt{x} + \frac{1}{\sqrt{x}}$.

Use calculus to find the approximate change in y when x increases from 4 to $4 + h$, where h is small. [4]

DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN

© Cambridge University Press & Assessment 2026

GradeMax

8 A curve has equation $y = xe^{2x+1}$.

(a) Find $\frac{dy}{dx}$. [3]

(b) The line L is the tangent to the curve at the point where $x = \frac{1}{2}$.

Find the exact coordinates of the two points where L meets the axes. [5]

DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN

© Cambridge University Press & Assessment 2026

GradeMax

(c) Use your answer to **8(a)** to find $\int x e^{2x+1} \, dx$. [4]

DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN

9 **(a)** In this question, time is in seconds and distances are in metres.

At time $t = 0$, particle A starts at the origin and moves with velocity $\begin{pmatrix} 2 \\ 1 \end{pmatrix}$.

At the same time, particle B starts from the point with position vector $\begin{pmatrix} -3 \\ 4 \end{pmatrix}$ and moves with velocity $\begin{pmatrix} 4 \\ -2 \end{pmatrix}$.

(i) Write down the position vector of B at time t. [1]

(ii) Determine whether or not the particles collide. [4]

DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN

© Cambridge University Press & Assessment 2026

GradeMax

(b) The point Q has position vector $3\mathbf{i}+2\mathbf{j}$.
The point R has position vector $-\mathbf{i}+4\mathbf{j}$.
The point S has position vector $a\mathbf{i}+b\mathbf{j}$, where a and b are integers.

It is given that:

- S lies on the straight line QR
- $\left|\overrightarrow{RS}\right| = \sqrt{5}$.

Find the possible values of a and b. [5]

DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN

10 **(a)** Given that $\log_5(x^2) - \log_5 x - 3\log_x 5 = 2$, find x. [6]

(b) Solve the equation $2 \times 8^{2x+1} - 3 \times 2^{3x+4} - 64 = 0$. [4]

DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN

© Cambridge University Press & Assessment 2026

GradeMax

11 A curve has equation $y = -x^2 + 3ax - 2a^2$ where a is a positive constant.
The area of the region enclosed by the curve and the x-axis is $\frac{9}{16}$.

Find the value of a. [6]

DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN

Question 12 is on the back page.

GradeMax

12 Find the coordinates of the points of intersection of the circles with equations $x^2+2x+y^2-4y-20=0$ and $x^2-12x+y^2-6y+20=0$. [8]

DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (Cambridge University Press & Assessment) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest possible opportunity.

To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced online in our Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download at www.cambridgeinternational.org after the live examination series.

Cambridge International Education is the name of our awarding body and a part of Cambridge University Press & Assessment, which is a department of the University of Cambridge.

© Cambridge University Press & Assessment 2026