

Please check the examination details below before entering your candidate information

Candidate surname

Other names

Centre Number

Candidate Number

Pearson Edexcel Level 3 GCE

Monday 15 May 2023

Afternoon (Time: 1 hour 40 minutes)

Paper
reference

8FM0/01

Further Mathematics

Advanced Subsidiary

PAPER 1: Core Pure Mathematics

You must have:

Mathematical Formulae and Statistical Tables (Green), calculator

Total Marks

Candidates may use any calculator allowed by Pearson regulations. Calculators must not have the facility for symbolic algebra manipulation, differentiation and integration, or have retrievable mathematical formulae stored in them.

Instructions

- Use **black** ink or ball-point pen.
- If pencil is used for diagrams/sketches/graphs it must be dark (HB or B).
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions and ensure that your answers to parts of questions are clearly labelled.
- Answer the questions in the spaces provided
– *there may be more space than you need.*
- You should show sufficient working to make your methods clear. Answers without working may not gain full credit.
- Inexact answers should be given to three significant figures unless otherwise stated.

Information

- A booklet 'Mathematical Formulae and Statistical Tables' is provided.
- There are 10 questions in this question paper. The total mark for this paper is 80.
- The marks for **each** question are shown in brackets
– *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ►

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5.

In this question you must show all stages of your working.

Solutions relying on calculator technology are not acceptable.

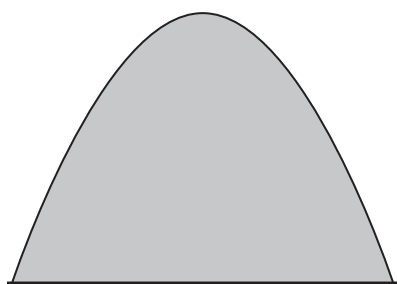


Figure 1

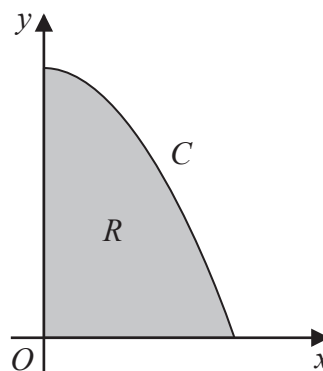


Figure 2

A large pile of concrete waste is created on a building site.

Figure 1 shows a central vertical cross-section of the concrete waste.

The curve C , shown in Figure 2, has equation

$$y + x^2 = 2 \quad 0 \leq x \leq \sqrt{2}$$

The region R , shown shaded in Figure 2, is bounded by the y -axis, the x -axis and the curve C .

The volume of concrete waste is modelled by the volume of revolution formed when R is rotated through 360° about the y -axis. The units are metres.

The density of the concrete waste is 900 kgm^{-3}

(a) Use the model to estimate the mass of the concrete waste. Give your answer to 2 significant figures.

(6)

(b) Give a limitation of the model.

(1)

The mass of the concrete waste is approximately 5500 kg.

(c) Use this information and your answer to part (a) to evaluate the model, giving a reason for your answer.

(1)



