

Paper Reference 9FM0/01
Pearson Edexcel
Level 3 GCE

Further Mathematics
Advanced
PAPER 1: Core Pure Mathematics 1

Thursday 25 May 2023 – Afternoon

Diagram Booklet

In the boxes below, write your name, centre number and candidate number.

Surname					
Other names					
Centre Number					
Candidate Number					

INSTRUCTIONS

**THIS DIAGRAM BOOKLET MUST BE RETURNED
WITH THE ANSWER BOOKLET AT THE END OF
THE EXAMINATION.**

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Question 6

Water is flowing into and out of a large tank.

Initially the tank contains 10 litres of water.

The rate of flow of the water is modelled so that

- there are V litres of water in the tank at time t minutes after the water begins to flow
- water enters the tank at a rate of
$$\left(3 - \frac{4}{1 + e^{0.8t}}\right) \text{ litres per minute}$$
- water leaves the tank at a rate proportional to the volume of water remaining in the tank

Question 8

N (newborns)	0 to less than 1 month old
J (juveniles)	1 to 3 months old
B (breeders)	over 3 months old