

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.

(continued on the next page)

Turn over

Question 6 continued.

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 $\left(3 - \frac{4}{1 + e^{0.8t}}\right)$ 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