

QUESTION 15 (5 marks)

An environmental scientist has modelled the population of the central rock-rat (a type of rodent) in a small region where considerable effort has been put into conservation. The rate of change is given by the formula

$P'(t) = \frac{6}{5}e^{\frac{t}{5}}$, where P represents the estimated population and t represents the time in months.

- a) Determine the equation for $P(t)$ given that $P(0) = 36$. *[3 marks]*

- b) Given that $5.5 \approx \ln(3^5)$, use your answer for 15a) to predict the population at 5.5 months. *[2 marks]*
