Advanced Higher Maths
SQA 2019 Paper
Question 13

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Maths.scot

An electronic device contains a timer circuit that switches off when the voltage, V, reaches a set value.

The rate of change of the voltage is given by

$$\frac{dV}{dt} = k(12 - V),$$

where k is a constant, t is the time in seconds, and $0 \leq V < 12$.

Given that $V = 2$ when $t = 0$, express V in terms of k and t. **5**

Answer:

$V = 12 - 10e^{-kt}$