9 In 2012 Adam bought a second hand car for £8500. Each year Adam has his car valued. He believes that there is a non-linear relationship between t, the time in years since he bought the car, and V, the value of the car in pounds. Fig. 9.1 shows successive values of V and $\log_{10} V$.

t	0	1	2	3	4
V	8500	6970	5720	4690	3840
$\log_{10} V$	3.93	3.84	3.76	3.67	3.58

Fig. 9.1

Adam uses a spreadsheet to plot the points $(t, \log_{10} V)$ shown in Fig. 9.1, and then generates a line of best fit for these points. The line passes through the points (0, 3.93) and (4, 3.58). A copy of his graph is shown in Fig. 9.2.

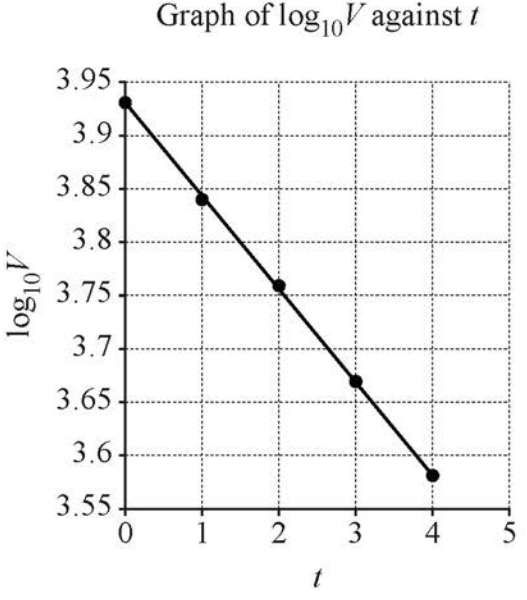

Fig. 9.2

(a) Find an expression for $\log_{10} V$ in terms of t. **[3]**

(b) Find a model for V in the form $V = A \times b^t$, where A and b are constants to be determined. Give the values of A and b correct to 2 significant figures. **[3]**

In 2017 Adam's car was valued at £3150.

(c) Determine whether the model is a good fit for this data. **[1]**

A company called Webuyoldcars pays £500 for any second hand car. Adam decides that he will sell his car to this company when the annual valuation of his car is less than £500.

(d) According to the model, after how many years will Adam sell his car to Webuyoldcars? **[3]**