**14.** The value of a car, £$V$, can be modelled by the equation

$$V = 15\,700e^{-0.25t} + 2300 \qquad t \in \mathbb{R}, \ t \geqslant 0$$

where the age of the car is $t$ years.

Using the model,

(a) find the initial value of the car.

**(1)**

Given the model predicts that the value of the car is decreasing at a rate of £500 per year at the instant when $t = T$,

(b) (i) show that

$$3925e^{-0.25T} = 500$$

(ii) Hence find the age of the car at this instant, giving your answer in years and months to the nearest month.

(*Solutions based entirely on graphical or numerical methods are not acceptable.*)

**(6)**

The model predicts that the value of the car approaches, but does not fall below, £$A$.

(c) State the value of $A$.

**(1)**

(d) State a limitation of this model.

**(1)**