9. The vertical speed, $v\,\text{m s}^{-1}$, of a skydiver, t seconds after their parachute opened, is modelled by the equation

$$v = A + Be^{-0.5t}$$

where A and B are constants.

Given that the vertical speed of the skydiver was

- $56\,\text{m s}^{-1}$ at the instant the parachute opened
- $10\,\text{m s}^{-1}$ exactly 5 seconds after the parachute opened

(a) find a complete equation for the model.
Give the values of A and B to 3 significant figures.

(4)

Given also that the skydiver eventually descended safely to the ground at a constant vertical speed of $6\,\text{m s}^{-1}$

(b) evaluate the model.

(2)