6. A scientist is monitoring the flight of sea birds after they leave their nests on a cliff.

The height above the sea, h metres, of one of the birds is modelled by the equation

$$h = A - B\,t^{1.5} \qquad h \geqslant 0 \qquad 0 \leqslant t \leqslant T$$

where t seconds is the time after the bird leaves its nest and A, B and T are positive constants.

Given that

- the bird was 17.6 m above the sea exactly 4 seconds after leaving its nest
- the bird was 11.9 m above the sea exactly 9 seconds after leaving its nest

(a) find a complete equation for the model.

(4)

Find, according to the model,

(b) the height of the bird's nest above the sea,

(1)

(c) the limitation on the value of T.

(2)