

4. Water is leaking from the bottom of a barrel.

- 4 minutes after the leak starts, there are 50 litres of water in the barrel
- 9 minutes after the leak starts, there are 20 litres of water in the barrel

The volume, V litres, of water in the barrel, t minutes after the leak started is modelled by the equation

$$V = a + b\sqrt{t}$$

where a and b are constants.

(a) Find a complete equation for the model.

(3)

Given that, initially, the barrel was **half** full of water,

(b) use the equation to find the capacity of the barrel.

(1)

(c) Find a limitation on the values of t .

(2)