

**8** The rate of change of a certain population  $P$  at time  $t$  is modelled by the equation  $\frac{dP}{dt} = (100 - P)$ .

Initially  $P = 2000$ .

**(a)** Determine an expression for  $P$  in terms of  $t$ . **[7]**

**(b)** Describe how the population changes over time. **[2]**