

- 2 A ball of mass 2 kg is projected vertically downwards with speed  $5 \text{ ms}^{-1}$  through a liquid. At time  $t \text{ s}$  after projection, the velocity of the ball is  $v \text{ ms}^{-1}$  and its displacement from its starting point is  $x \text{ m}$ . The forces acting on the ball are its weight and a resistive force of magnitude  $0.2v^2 \text{ N}$ .

(a) Find an expression for  $v$  in terms of  $t$ .

[6]

[illegible]

(b) Deduce what happens to  $v$  for large values of  $t$ .

[1]