

A ball of mass 2 kg is projected vertically downwards with speed 5 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]

(b) Deduce what happens to v for large values of t . [1]