5 A particle P of mass m kg is projected vertically upwards from a point O with an initial speed of $20\,\text{m s}^{-1}$ and moves under gravity. There is a resistive force of magnitude $0.025mv^2$ N, where $v\,\text{m s}^{-1}$ is the speed of P at time t s after projection. The displacement of P from O is x m at time t s after projection.

(a) Find an expression for v in terms of x, while P is moving upwards. [5]

(b) Find an expression for v in terms of t, while P is moving upwards. [4]