

- 4 A particle of mass  $0.5 \text{ kg}$  moves along a horizontal straight line. Its velocity is  $v \text{ m s}^{-1}$  at time  $t \text{ s}$ . The forces acting on the particle are a driving force of magnitude  $50 \text{ N}$  and a resistance of magnitude  $2v^2 \text{ N}$ . The initial velocity of the particle is  $3 \text{ m s}^{-1}$ .

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

[7]

[illegible]

(b) Deduce the limiting value of  $v$ .

[1]