

- 6** A particle  $P$  of mass  $2\text{ kg}$  moving on a horizontal straight line has displacement  $x\text{ m}$  from a fixed point  $O$  on the line and velocity  $v\text{ m s}^{-1}$  at time  $t\text{ s}$ . The only horizontal force acting on  $P$  has magnitude  $\frac{1}{10}(2v-1)^2\text{ e}^{-t}\text{ N}$  and acts towards  $O$ . When  $t = 0$ ,  $x = 1$  and  $v = 3$ .

(a) Find an expression for  $v$  in terms of  $t$ . [5]

[illegible]

(b) Find an expression for  $x$  in terms of  $t$ .

[4]

This image shows a full page of white paper with horizontal dotted lines, typical of primary school writing paper. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.