

A particle P moves in a straight line through a point O . The velocity $v \text{ m s}^{-1}$ of P , at time $t \text{ s}$ after passing O , is given by

$$v = \frac{9}{4} + \frac{b}{(t+1)^2} - ct^2,$$

where b and c are positive constants. At $t = 5$, the velocity of P is zero and its acceleration is $-\frac{13}{12} \text{ m s}^{-2}$.

- (a) Show that $b = 9$ and find the value of c . [5]

[illegible]

- [5]

This image shows a full page of white paper with horizontal dotted lines. The lines are evenly spaced and run across the width of the page, providing a guide for handwriting practice. There are no margins, text, or other markings on the page.