

- 5 A particle  $P$  is moving along a straight line with acceleration  $3ku - kv$  where  $v$  is its velocity at time  $t$ ,  $u$  is its initial velocity and  $k$  is a constant. The velocity and acceleration of  $P$  are both in the direction of increasing displacement from the initial position.

**(a)** Find the time taken for  $P$  to achieve a velocity of  $2u$ .

[3]

This image shows a full page of a handwriting practice worksheet. It consists of multiple rows of horizontal dashed lines spaced evenly down the page, providing a guide for letter height and placement. The background is plain white, and there are no other markings or text present.

**(b)** Find an expression for the displacement of  $P$  from its initial position when its velocity is  $2u$ . [5]