

- 7 A particle  $P$  is moving along the  $x$ -axis. At time  $t$  seconds ( $t \geq 0$ ) the velocity of  $P$  is  $v$  m/s where

$$v = t^2 - 10t + 28$$

- (a) Find the velocity of  $P$  when  $t = 1$

(1)

Given that the distance of  $P$  from the origin is 24 m when  $t = 3$

- (b) find the distance of  $P$  from the origin when  $t = 5$

(5)

- (c) Find the acceleration of  $P$  when  $t = 9$

(2)

- (d) (i) Show that there are no values of  $t$  for which  $P$  is instantaneously at rest.

- (ii) Find the least magnitude of the velocity of  $P$

(3)

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**Question 7 continued**

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**Question 7 continued**

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**(Total for Question 7 is 11 marks)**

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