1. A particle P moves along a straight line. The fixed point O is on the line. At time t seconds, $t > 0$, the displacement of P from O is x metres, where

$$x = 2t^3 - 21t^2 + 60t$$

Find

(a) the values of t for which P is instantaneously at rest

(4)

(b) the distance travelled by P in the interval $1 \leqslant t \leqslant 3$

(2)

(c) the magnitude of the acceleration of P at the instant when $t = 3$

(2)

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Question 1 continued

(Total for Question 1 is 8 marks)