4 A particle P is moving along the x-axis. At time t seconds, $t \geqslant 0$, the velocity, v m/s, of P is given by $v = 2t^2 - 16t + 30$

(a) Find the acceleration, in m/s^2, of P when $t = 5$

(2)

P comes to instantaneous rest at the points M and N at times t_1 seconds and t_2 seconds where $t_2 > t_1$

(b) Find the exact distance MN

(8)

Question 4 continued

(Total for Question 4 is 10 marks)