8 A particle P moves along the positive x-axis. At time t seconds ($t \geqslant 0$) the velocity, v m/s, of P is given by $v = 3 + 5t - 2t^2$

At time t seconds, P is at the point with coordinates $(x, 0)$.

Given that at time $t = 0$, P is at the point with coordinates $(5, 0)$, find the maximum value of x, justifying that this is a maximum value.

(8)

Question 8 continued

Question 8 continued

Question 8 continued

(Total for Question 8 is 8 marks)