9 In this question lengths are in centimetres and time is in seconds.

A particle P moves in a straight line such that its displacement s, from a fixed point at a time t, is given by $s = 3(t+2)(t-4)^2$ for $0 \leqslant t \leqslant 5$.

(a) Find the values of t for which the velocity, v, of P is zero. [4]

(b) On the axes below, sketch the displacement–time graph of P, stating the intercepts with the axes. [3]



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(c) On the axes below, sketch the velocity–time graph of P, stating the intercepts with the axes. [2]



(d) (i) Find an expression for the acceleration of P at time t. [1]

(ii) Hence, on the axes below, sketch the acceleration–time graph of P, stating the intercepts with the axes. [2]



Question 10 is printed on the next page.