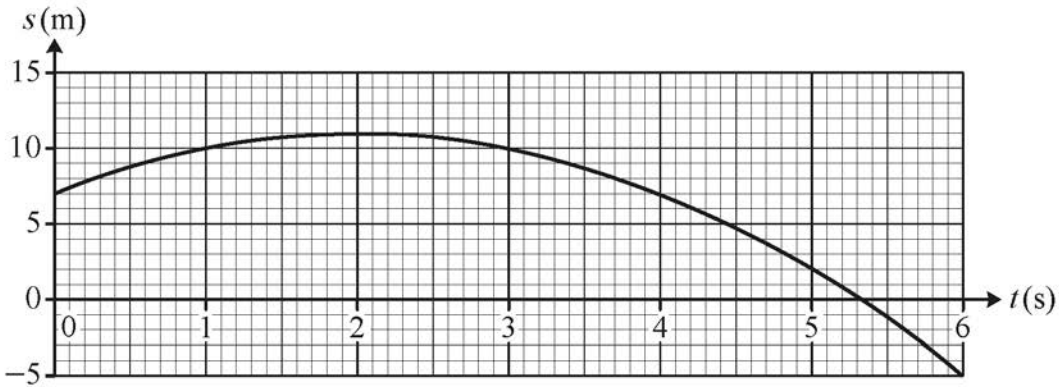
6 The displacement of a particle is modelled by the equation $s = 7 + 4t - t^2$, where s metres is the displacement from the origin at time t seconds. The diagram shows part of the displacement-time graph for the particle. The point (2, 11) is the maximum point on the graph.



(a) Kai argues that the point (2, 11) is on the graph, so the particle has travelled a distance of 11 metres in the first 2 seconds.

Comment on the validity of Kai's argument. **[1]**

(b) Determine the total distance the particle travels in the first 10 seconds. **[3]**

(c) Find an expression for the velocity of the particle at time t. **[2]**

(d) Find the speed of the particle when $t = 10$. **[2]**