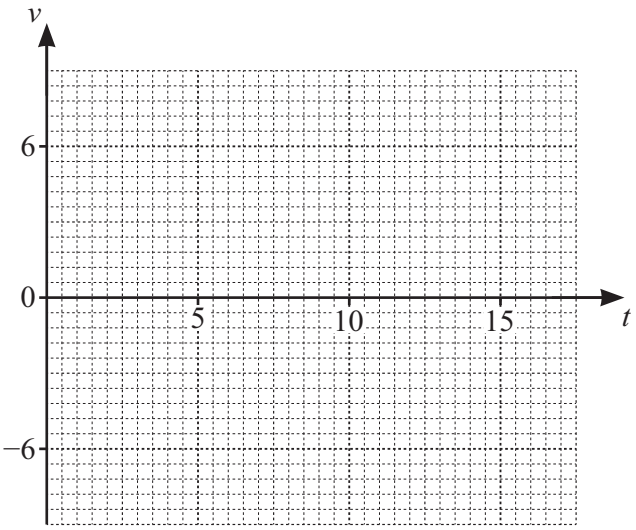
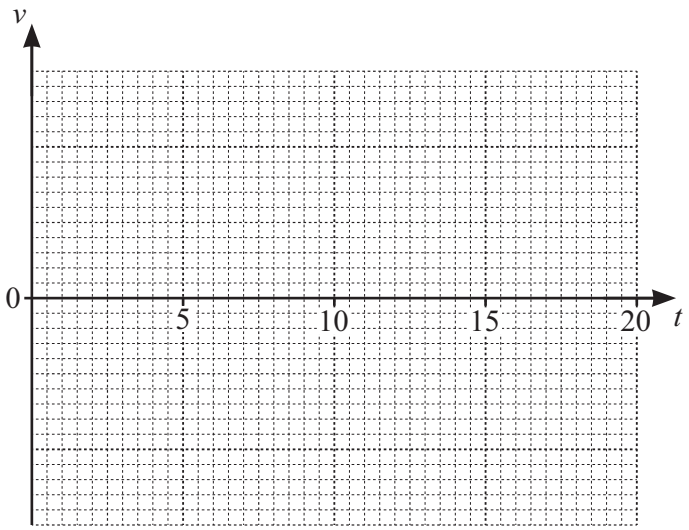
**9** In this question time is measured in seconds.

**(a)** A particle is moving in a straight line with constant velocity of $6\,\text{ms}^{-1}$. At time $t = 0$, it passes a fixed point $A$. At time $t = 5$ it suddenly changes direction and moves with a different constant velocity along the same straight line. It passes the point $A$ again at time $t = 15$. Sketch the velocity–time graph for the motion. [3]

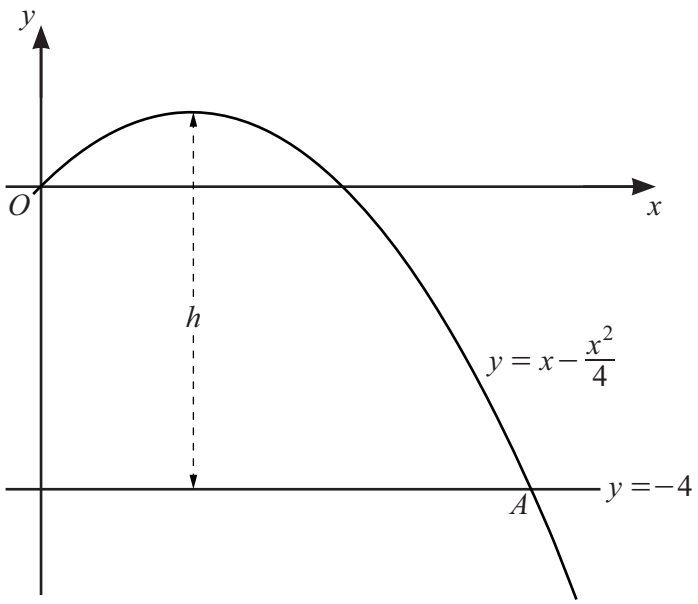



**(b)** Another particle is moving in a straight line with constant acceleration. At time $t = 0$ it passes a fixed point $B$ with velocity $-8\,\text{ms}^{-1}$. It passes the point $B$ again at time $t = 20$. Sketch the velocity–time graph for the motion. [3]




DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN

**10** The diagram shows part of the curve $y = x - \frac{x^2}{4}$ and the line $y = -4$. The curve and the line intersect at the point $A$.




**(a)** The maximum point on the curve is at a perpendicular distance $h$ from the line $y = -4$. Find the value of $h$. [4]

DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN