

- 3 At time $t = 0$ a particle P leaves the origin O and moves along the x -axis. At time t seconds the velocity of P is $v \text{ m s}^{-1}$, where:

$$v = t^2(6 - t)^2, t \geq 0$$

- (a) Sketch a velocity–time graph for the motion of P .
b Find the maximum value of v and the time at which it occurs.

a $v = t^2(6 - t)^2$

Velocity is zero when $t = 0$ and $t = 6$.

The graph touches the time axis at $t = 0$ and $t = 6$.

Graph only shown for $0 \leq t \leq 6$, as this is the range over which equation is valid.



