

Kinematic

Displacement $s(t)$

Velocity $v(t) = s'(t)$

Acceleration $a(t) = v'(t)$

Key words

At rest or change direction: $v(t) = 0$

Constant velocity: $a(t) = 0$

$v(t)$	Meaning
$= 0$	At rest
> 0	Moving to the right
< 0	Moving to the left

1. A particle moves in a straight line with position given by $s(t) = t^3 - 3t + 1$, where t is the time in seconds, $t \geq 0$. Find the velocity of the particle at $t = 1$.

2. The velocity $v \text{ ms}^{-1}$ of a particle after t seconds is given by $v(t) = (0.1t + 0.5)^2 - 4$. Find the value of t when the acceleration is 0.9.
