**11A Functions of Time**



1. A body moves in a straight line, such that its displacement, $s$ metres, from a point O at time $t$ seconds is given by $s=2t^{3}-3t$ for $t>0$
2. Find the value of $s$ when $t=2$
3. Find the time taken for the body to return to O.
4. A toy train travels along a straight track, leaving the start of the track at time $t=0$. It then returns to the start of the track. The distance, $s$ metres, from the start of the track at time $t$ seconds is modelled by:

$s=4t^{2}-t^{3}$ where $0\leq t\leq 4$

Explain why there is a time restriction on this model

1. A body moves in a straight line such that its velocity, $v ms^{-1}$, at time $t$ seconds is given by:

$v=2t^{2}-16t+24$ for $t\geq 0$

Find:

1. The initial velocity
2. The values of t when the body is instantaneously at rest
3. The value of t when the velocity is 64ms-1
4. The greatest speed of the body in the interval $0\leq t\leq 5$