

The speed,  $v$  m/s, of a particle moving in a straight line at time  $t$  seconds is given by  $v=V(9 - t^2)$ . Find, correct to the nearest cm, the distance travelled by the particle in the first two seconds of its motion if it starts from the origin.

$$\begin{aligned} \int_0^2 V(9-t^2) dt &= 9/2 \arcsin(t/3) + (t)/2 V(9-t^2) \\ 9/2 \arcsin(t/3) + (t)/2 V(9-t^2) \Big|_0^2 &= 9/2 \arcsin(2/3) + V(9-4) \\ &= 9/2 \arcsin(2/3) + V(5) \end{aligned}$$