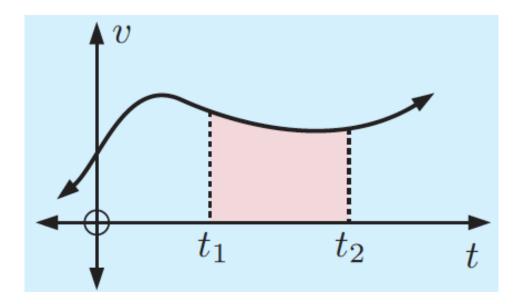


Kinematic

Displacement = $\int v(t) dt$

Distance = $\int_{t_1}^{t_2} v(t) dt$ = The area below the curve



 $Velocity = \int a(t) dt$



1. A car moves in a straight line has velocity $v \ km \ s^{-1}$.

Find the expression of displacement $s \ km$ at time t seconds.

The velocity v is given by $v(t) = 6e^{2t} + t$. When t = 0, s = 10.

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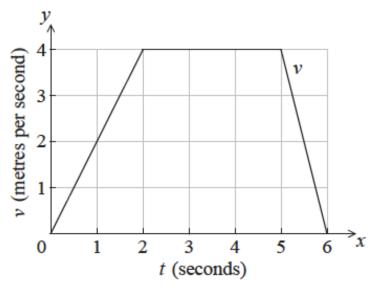
2. A particle moves in a straight line with velocity function $v(t) = \cos t \ m \ s^{-1}$. Find the distance travelled from $t = 0 \ to$

 $t=\frac{\pi}{2}$.



Paper 1

1. \bigcirc A toy car travels with velocity $v ms^{-1}$ for six seconds. This is shown in the graph below.



- (a) Write down the car's velocity at t=3.
- (b) Find the car's acceleration at t = 1.5.



2. A rocket moving in a straight line has velocity $v \ kms^{-1}$ and displacement $s \ km$ at time t seconds. The velocity v is given by $v(t) = 6e^{2t} + t$. When t = 0, s = 10.

Find an expression for the displacement of the rocket in terms of t .



Paper 2

1. $^{\textcircled{\tiny \parallel}}$ A particle moves in a straight line. Its velocity $v\ ms^{-1}$ after t seconds is given by

$$v = 6t - 6$$
, for $0 \le t \le 2$.

After p seconds, the particle is 2 m from its initial position. Find the possible values of p .			



- 2. \blacksquare A particle moves in a straight line with velocity $v=12t-2t^3-1$, for $t\geq 0$, where v is in centimeters per second and t is in seconds.
- (a) Find the acceleration of the particle after 2.7 seconds.

(b) Find the displacement of the particle after 1.3 seconds.				