Solutions

Each answer shows the steps, then the **result**.

2.1

- $v = \dfrac{dx}{dt} = 6t^2$

2.2

- $a = \dfrac{dv}{dt} = 6 \text{ m s}^{-2}$

2.3

- $v = \int a\,dt = 3t + 5$

2.4

- Displacement = area $= 8 \times 3 = 24$ m

3.1 B

- velocity is the derivative of position

3.2 B

- the slope of the tangent gives the velocity

3.3

(a)

- $v = 3t^2 - 6$

(b)

- $a = 6t$

3.4

(a)

- $v = \int 6t\,dt = 3t^2$

(b)

- $v(2) = 3(2)^2 = 12 \text{ m s}^{-1}$