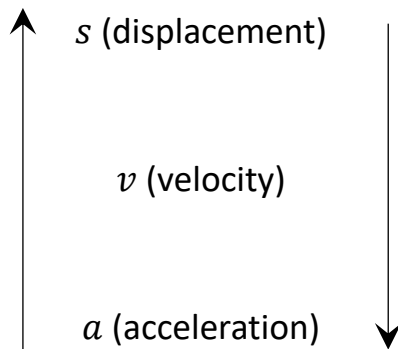


Using Differentiation



Example

A body moves in a straight line such that $v = 2t^2 - 11t + 14$. Initially (i.e. when $t = 0$), the displacement of the body from some fixed point O on the line is 50m. Find:

- The initial velocity of the body
- The values of t when the body is at rest
- The acceleration of the body when $t = 5$ s
- The displacement of the body when $t = 6$ s (we cover integration later in the chapter)

Test Your Understanding

Puttting the Cat's displacement from a house, in metres, is $t^3 - \frac{3}{2}t^2 - 36t$ where t is in seconds.

- (a) Determine the velocity of the cat when $t = 2$.
- (b) At what time will the cat be instantaneously at rest?
- (c) What is the cat's acceleration after 5 seconds?