**Using Differentiation**

(displacement)

(velocity)

(acceleration)

**Example**

A body moves in a straight line such that . Initially (i.e. when ), the displacement of the body from some fixed point O on the line is 50m. Find:

a) The initial velocity of the body

b) The values of t when the body is at rest

c) The acceleration of the body when t = 5s

d) The displacement of the body when t = 6s (we cover integration later in the chapter)

**Test Your Understanding**

Pudding the Cat’s displacement from a house, in metres, is where is in seconds.

(a) Determine the velocity of the cat when .

(b) At what time will the cat be instantaneously at rest?

(c) What is the cat’s acceleration after 5 seconds?

Exercise 11B Page 185