**Variable Acceleration in One Dimension**

Displacement ()

Velocity ()

Acceleration ()

Differentiate

Integrate

Don’t forget the constant of integration for indefinite integrals

**Example**

A particle is moving in a straight line with acceleration at time seconds given by

The velocity of the particle at time is ms-1. Find:

1. an expression for the velocity at time seconds
2. the maximum speed
3. the distance travelled in the first 3 seconds.

**Test Your Understanding** *(Textbook p168 Example 6)*

Exercise 8C Page 168

A particle of mass 6kg is moving on the positive -axis. At time seconds the displacement, , of the particle from the origin is given by

1. Find the velocity of the particle when .
2. Given that the particle is acted on by a single force of variable magnitude N which acts in the direction of the positive -axis,
3. Find the value of when