

## Section 2: General equations

### Exercise level 1

1. Find the Cartesian equation of the path of these projectiles by eliminating the parameter  $t$ :

(i)  $x = 3t, y = 4t^2$

(ii)  $x = 7t, y = 8t - 5t^2$

(iii)  $x = 5t, y = 3 + 2t - 4t^2$

2. Use  $10 \text{ m s}^{-2}$  for  $g$  in this question

A projectile is launched from the origin at an angle of  $60^\circ$  to the horizontal with an initial velocity of  $40 \text{ m s}^{-1}$ .

(i) Write down the  $x$  and  $y$  coordinates of the projectile after time  $t$ .

(ii) Show that the equation of trajectory of the projectile is  $y = x\sqrt{3} - \frac{1}{80}x^2$ .

(iii) Find  $y$  when  $x = 5$ .

(iv) Find  $x$  when  $y = 20$ .