7.

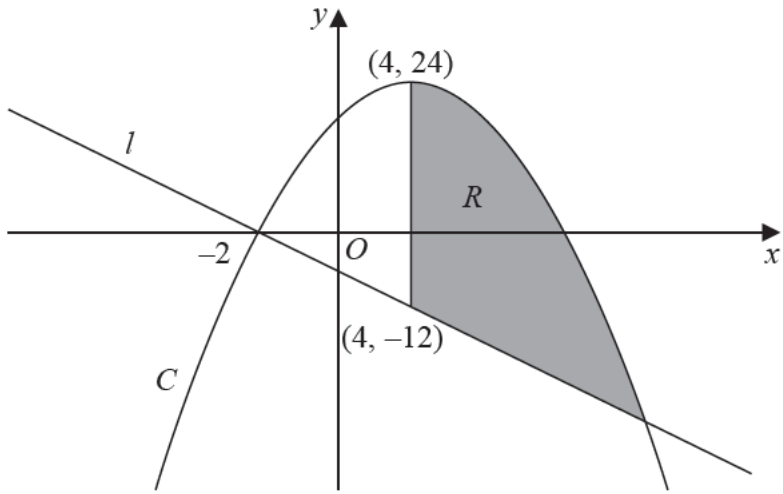

Figure 1

Figure 1 shows a sketch of the curve C with equation $y = f(x)$ where

- $f(x)$ is a quadratic expression
- C has a maximum turning point at (4, 24)
- C cuts the negative x-axis at –2

(a) (i) Deduce the coordinates of the point at which C cuts the positive x-axis.

(ii) Hence, or otherwise, find $f(x)$.

(3)

The straight line l, also shown in Figure 1, passes through the points (–2, 0) and (4, –12)

(b) Find an equation for l, writing your answer in the form $y = mx + c$, where m and c are constants to be found.

(3)

A shaded region R is shown in Figure 1.

(c) Use inequalities to define R.

(3)