

4.

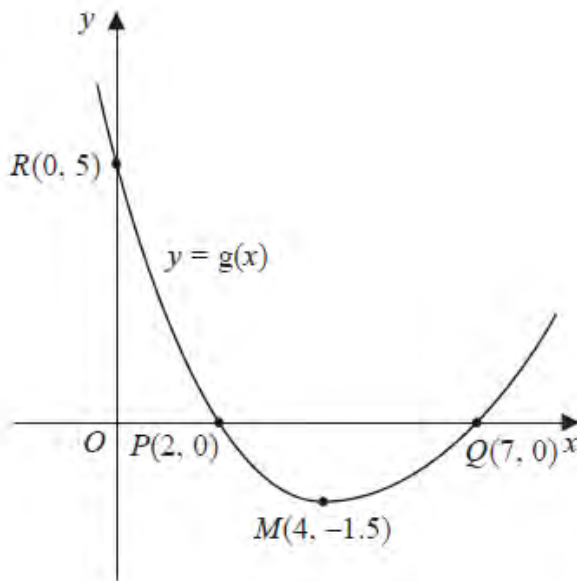


Figure 1

Figure 1 shows a sketch of the curve with equation $y = g(x)$.

The curve has a single turning point, a minimum, at the point $M(4, -1.5)$.

The curve crosses the x -axis at two points, $P(2, 0)$ and $Q(7, 0)$.

The curve crosses the y -axis at a single point $R(0, 5)$.

(a) State the coordinates of the turning point on the curve with equation $y = 2g(x)$. (1)

(b) State the largest root of the equation $g(x + 1) = 0$. (1)

(c) State the range of values of x for which $g'(x) \leq 0$. (1)

Given that the equation $g(x) + k = 0$, where k is a constant, has no real roots,

(d) state the range of possible values for k . (1)

(Total for Question 4 is 4 marks)