

10.

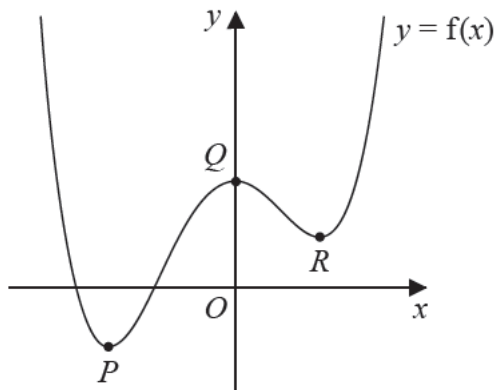


Figure 2

Figure 2 shows a sketch of the curve with equation $y = f(x)$.

The curve has exactly three stationary points

- a minimum turning point P at $(-3, -7)$
- a maximum turning point Q at $(0, 10)$
- a minimum turning point R at $(2, 5)$

(a) Deduce the values of x for which $f'(x) < 0$. Write your answer in set notation.

(2)

Given that the value of $f''(x)$ is -5 at one of the stationary points,

(b) explain why this must be point Q .

(1)

Given that the equation $f(x) = k$, where k is a constant, has **exactly** 3 roots,

(c) write down the two possible values for k .

(2)

On the next page there is an unlabelled copy of Figure 2 called Diagram 1.

(d) On Diagram 1 sketch a graph of the curve with equation $y = f'(x)$.

(3)

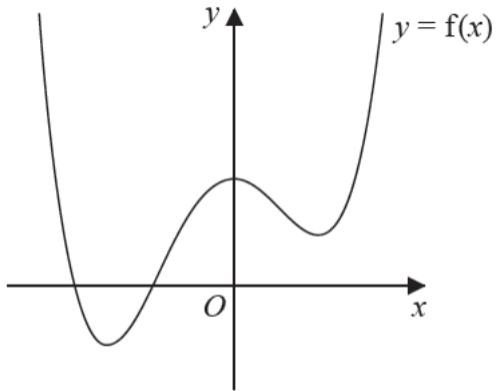


Diagram 1