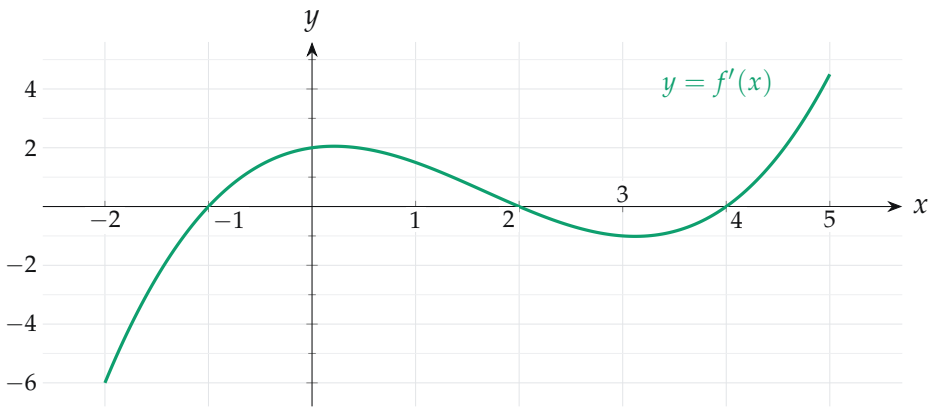
Marked example 1

Paper 1 style · No calculator

1 5 marks SL 5.2 · 5.8 ●●○ Typical

The following diagram shows the graph of $y = f'(x)$, the derivative of a function f, for $-2 \leq x \leq 5$. The graph of f' crosses the x-axis at $x = -1$, $x = 2$ and $x = 4$.



(a) Write down the x-coordinates of the points on the graph of f at which the tangent is horizontal. [1]

(b) Write down the intervals on which f is increasing. [2]

(c) Find the x-coordinate of the local maximum point of the graph of f. Justify your answer. [2]

MARKSCHEME (a)

$x = -1,\ x = 2,\ x = 4$ A1

Total 1 mark

Note All three values are needed for A1.

MARKSCHEME (b)

$-1 < x < 2$ A1

$4 < x \leq 5$ A1

Total 2 marks

Note Accept $4 < x < 5$ and $x > 4$, and accept non-strict inequalities at -1, 2 and 4. Accept interval notation. Award A1A0 if an extra, incorrect interval is given.

MARKSCHEME (c)

f' changes sign from positive to negative at $x = 2$ R1

$x = 2$ A1

Total 2 marks

Note Do not award R0A1. A reason based only on $f'(2) = 0$ earns R0: f' is also zero at the two local minimum points $x = -1$ and $x = 4$.

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