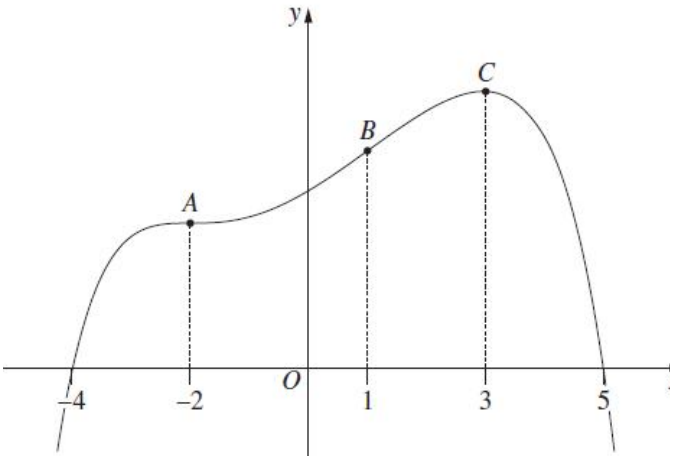
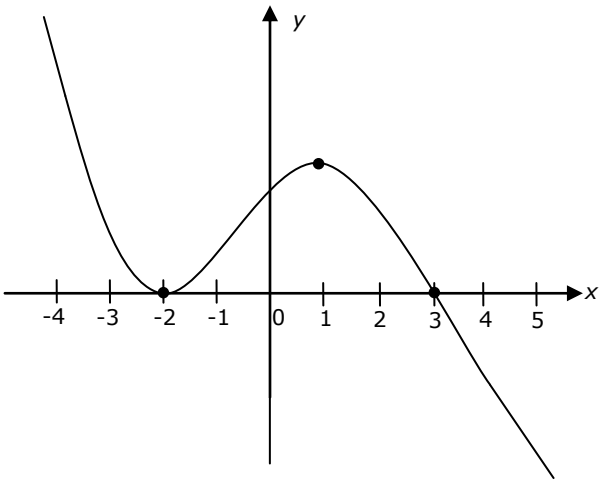
2014 14e The diagram shows the graph of a function $f(x)$.
The graph has a horizontal point of inflexion at A, a point of inflexion at B and a maximum turning point at C.

Sketch the graph of the derivative $f'(x)$.

3





[Note:

- $f(x)$ increasing when $x < -2$.
  $\therefore f'(x)$ is +ve.
- Hor pt of inflexion at $x = -2$.
  $\therefore f'(-2) = 0$.
- $f(x)$ increasing when $-2 < x < 3$.
  $\therefore f'(x)$ is +ve.
- Maximum at $x = 3$.
  $\therefore f'(3) = 0$.
- $f(x)$ decreasing when $x > 3$.
  $\therefore f'(x)$ is –ve.
- Pt of inflexion at $x = 1$.
  $\therefore f'(1)$ is max value.]

State Mean: **1.54**

* These solutions have been provided by *projectmaths* and are not supplied or endorsed by BOSTES.

Board of Studies: Notes from the Marking Centre

Most candidates were able to correctly engage with at least one of the important features of the derivative graph, usually point C from the given function. In better responses, candidates copied the original function into their answer booklet and completed their derivative graph directly below, indicating important features.

Common problems were:

- poor graphing skills;
- using incorrect x intercepts and nature of turning points.

http://www.boardofstudies.nsw.edu.au/hsc_exams/2014/pdf_doc/2014-maths.pdf