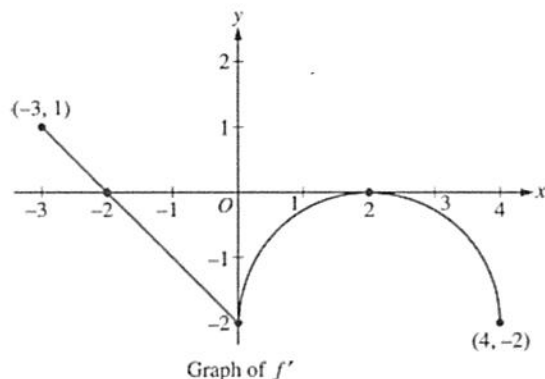


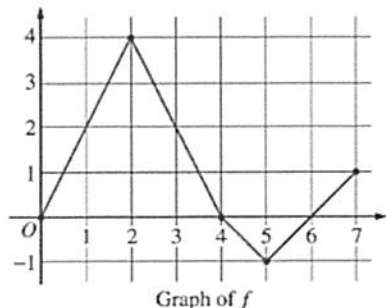
2003 AB 4



Let f be a function defined on the closed interval $-3 \leq x \leq 4$ with $f(0) = 3$. The graph of f' , the derivative of f , consists of one line segment and a semicircle, as shown above.

- On what intervals, if any, is f increasing? Justify your answer.
- Find the x -coordinate of each point of inflection of the graph of f on the open interval $-3 < x < 4$. Justify your answer.
- Find an equation for the line tangent to the graph of f at the point $(0, 3)$.
- Find $f(-3)$ and $f(4)$. Show the work that leads to your answers.

2003 AB 5 Form B



Let f be a function defined on the closed interval $[0, 7]$. The graph of f , consisting of four line segments, is shown above. Let g be the function given by $g(x) = \int_2^x f(t) dt$.

- Find $g(3)$, $g'(3)$, and $g''(3)$.
- Find the average rate of change of g on the interval $0 \leq x \leq 3$.
- For how many values c , where $0 < c < 3$, is $g'(c)$ equal to the average rate found in part (b)? Explain your reasoning.
- Find the x -coordinate of each point of inflection of the graph of g on the interval $0 < x < 7$. Justify your answer.