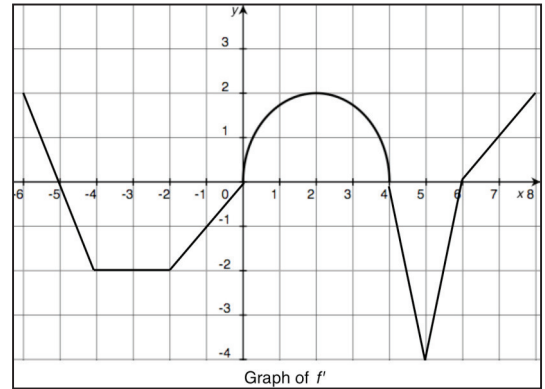


Example A4: The function f is defined and differentiable on the interval $[-6, 8]$ and satisfies $f(0) = -3$. The graph of $y = f'(x)$, the derivative of f , consists of a semicircle and six line segments as shown in the figure below.



- a) Find $f(6)$ and $f(-6)$. (2)
- b) Find the x coordinate of each point of inflection of the graph of $y = f(x)$ on $-6 < x < 8$. Explain your reasoning. (1)
- c) Find the equation of the tangent line to f at $x = -6$. Use this line to approximate $f(-5.9)$. Is this value an over-approximation or under-approximation? Explain. (2)
- d) Find the absolute maximum value of $f(x)$ on $-6 \leq x \leq 8$. Justify your answer. (2)
- e) The function g is defined as $g(x) = \frac{x^2}{2} - f(x)$. Find the values of x for each critical point of g on $-6 < x < 8$. Explain your reasoning. (2)
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