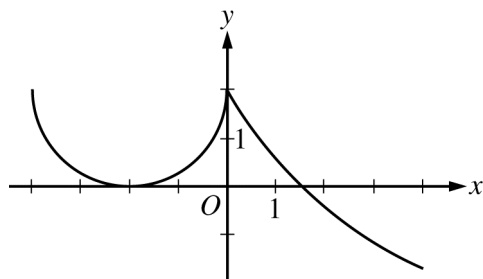


2009 AP[®] CALCULUS AB FREE-RESPONSE QUESTIONS



Graph of f'

6. The derivative of a function f is defined by $f'(x) = \begin{cases} g(x) & \text{for } -4 \leq x \leq 0 \\ 5e^{-x/3} - 3 & \text{for } 0 < x \leq 4 \end{cases}$.

The graph of the continuous function f' , shown in the figure above, has x -intercepts at $x = -2$ and $x = 3\ln\left(\frac{5}{3}\right)$. The graph of g on $-4 \leq x \leq 0$ is a semicircle, and $f(0) = 5$.

- (a) For $-4 < x < 4$, find all values of x at which the graph of f has a point of inflection. Justify your answer.
- (b) Find $f(-4)$ and $f(4)$.
- (c) For $-4 \leq x \leq 4$, find the value of x at which f has an absolute maximum. Justify your answer.

WRITE ALL WORK IN THE PINK EXAM BOOKLET.

END OF EXAM