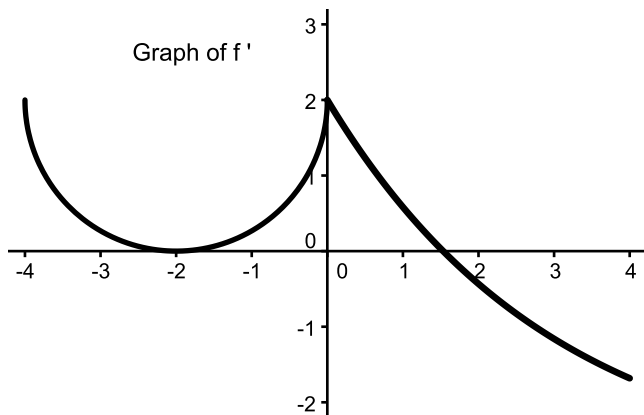You *MAY NOT* use a calculator.

The derivative of a function f is defined by $f'(x) = \begin{cases} g(x) & \text{if } -4 \leq x \leq 0 \\ 5e^{-x/3} - 3 & \text{if } 0 < x \leq 4 \end{cases}$. The graph of the continuous function f', shown in the figure below, has x-intercepts at $x = -2$ and $x = 3\ln\left(\dfrac{5}{3}\right)$. The graph of g on $-4 \leq x \leq 0$ is a semicircle, and $f(0) = 5$.

Graph of f'

(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.