AP CALCULUS AB DR. PAUL L. BAILEY

Homework 0420 Monday, April 20, 2020

Problem 1. The function f is differentiable on the closed interval [-6,5] and satisfies f(-2) = 7. The graph of f', the derivative of f, consists of a semicircle and three line segments, as shown in the figure below.



- (a) Find the values of f(-6) and f(5).
- (b) On what intervals is f increasing? Justify your answer.
- (c) Find the absolute minimum value of f on the closed interval [-6, 5]. Justify your answer.
- (d) For each of f''(-5) and f''(3), find the value or explain why it does not exist.

Problem 2. The figure below shows the graph of the piecewise linear function f. For $-4 \le x \le 12$, the function g is defined by $g(x) = \int_2^x f(t) dt$.



- (a) Does g have a relative minimum, a relative maximum, or neither at x = 10? Justify your answer.
- (b) Does the graph of g have a point of inflection at x = 4? Justify your answer.
- (c) Find the absolute minimum value and the absolute maximum value of g on the interval $-4 \le x \le 12$. Justify your answers.
- (d) For $-4 \le x \le 12$, find all intervals for which $g(x) \le 0$.