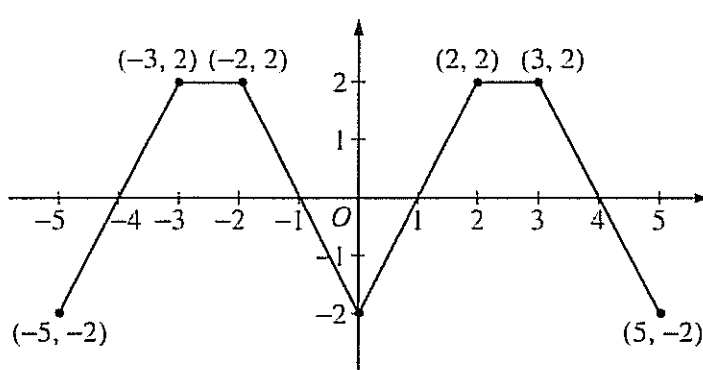


Class.

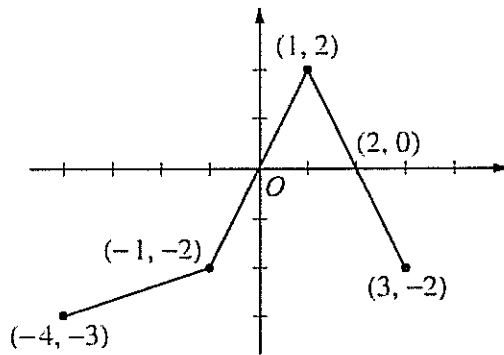


Graph of f

3. The graph of the function f shown above consists of six line segments. Let g be the function given by $g(x) = \int_0^x f(t) dt$.

Class
(a) Find $g(4)$, $g'(4)$, and $g''(4)$.

b) Find $g(-5)$.

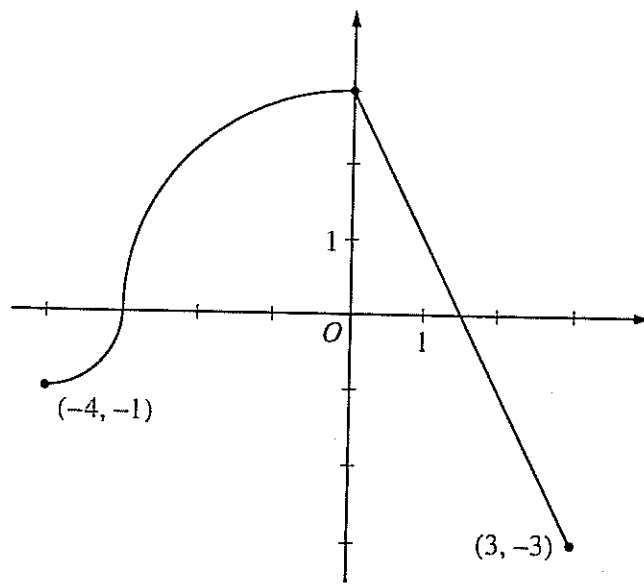


Graph of f

4. The graph of the function f above consists of three line segments.

(a) Let g be the function given by $g(x) = \int_{-4}^x f(t) dt$. For each of $g(-1)$, $g'(-1)$, and $g''(-1)$, find the value or state that it does not exist.

b) Find absolute maximum value of $g(x)$.



Graph of f

4. The continuous function f is defined on the interval $-4 \leq x \leq 3$. The graph of f consists of two quarter circles

and one line segment, as shown in the figure above. Let $g(x) = 2x + \int_0^x f(t) dt$.

(a) Find $g(-3)$. Find $g'(x)$ and evaluate $g'(-3)$.

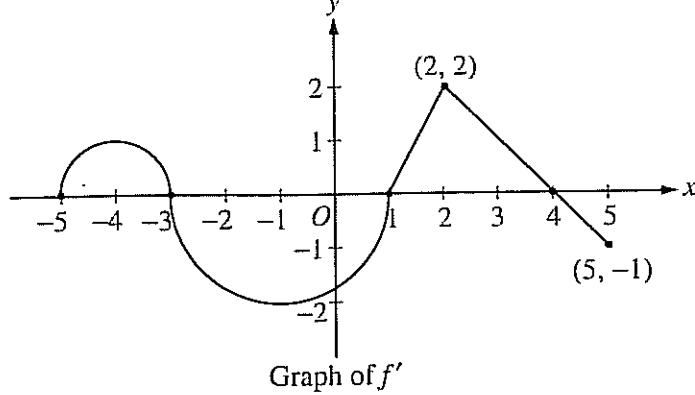
(b) Determine the x -coordinate of the point at which g has an absolute maximum on the interval $-4 \leq x \leq 3$. Justify your answer.

(c) Find all values of x on the interval $-4 < x < 3$ for which the graph of g has a point of inflection. Give a reason for your answer.

(d) Find the average rate of change of f on the interval $-4 \leq x \leq 3$. There is no point c , $-4 < c < 3$, for which $f'(c)$ is equal to that average rate of change. Explain why this statement does not contradict the Mean Value Theorem.

Class Solve part b. - * Separate page.

~~Find $g(3)$~~



Homework

4. Let f be a function defined on the closed interval $-5 \leq x \leq 5$ with $f(1) = 3$. The graph of f' , the derivative of f , consists of two semicircles and two line segments, as shown above.
- For $-5 < x < 5$, find all values x at which f has a relative maximum. Justify your answer.
 - For $-5 < x < 5$, find all values x at which the graph of f has a point of inflection. Justify your answer.
 - Find all intervals on which the graph of f is concave up and also has positive slope. Explain your reasoning.
 - Find the absolute minimum value of $f(x)$ over the closed interval $-5 \leq x \leq 5$. Explain your reasoning.
-

Class

Find: $f(-3)$ and $f(-1)$ and $f(4)$. Separate page.