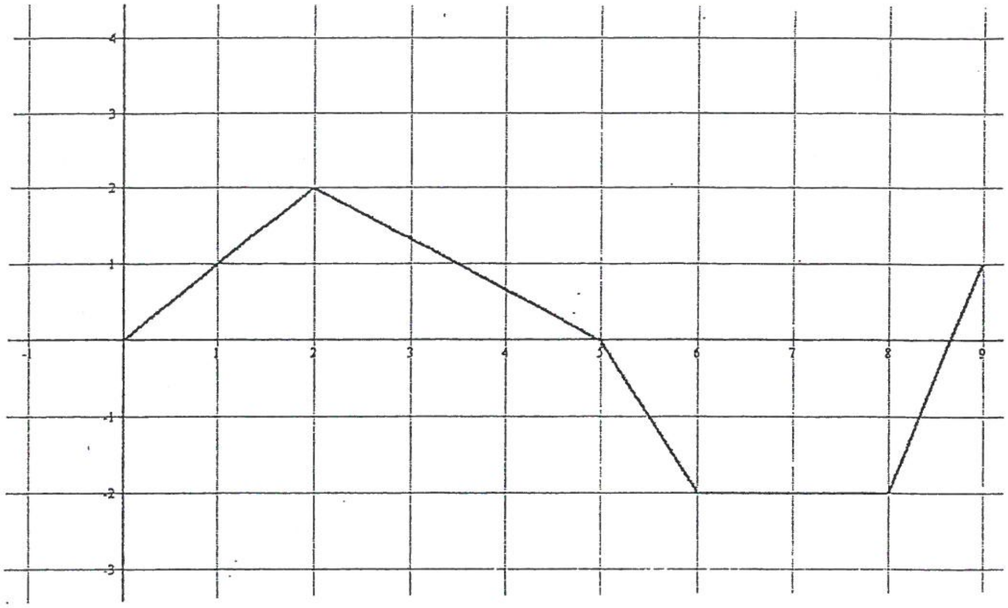

The graph of the function f is shown above. The domain of f is $0 \le x \le 9$.

Let g be the function defined by: $g(x) = \int_2^x f(t)dt$

a) Find the value of $g(5)$.

b) Find the value of $g(0)$.

c) Find the value of $g'(1)$.

d) Find the value of $g'(5)$.

e) Find the value of $g''(3)$.

f) Find the value of $g''(5)$.

g) For what values of x in the interval [0, 9] is g increasing. Justify your answer.

h) For what values of x in the interval [0, 9] is the graph of g concave up? Justify your answer.

i) Find the absolute minimum value of g on the interval [0, 9]. Justify your answer.

j) State all the x-coordinate of all inflection points of the function g.

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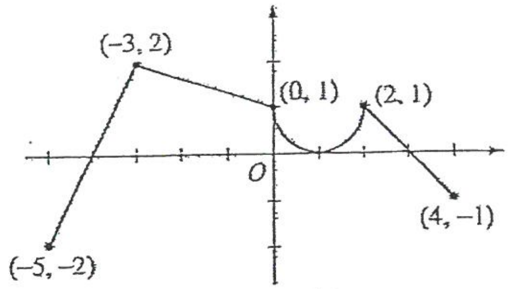


Graph of f

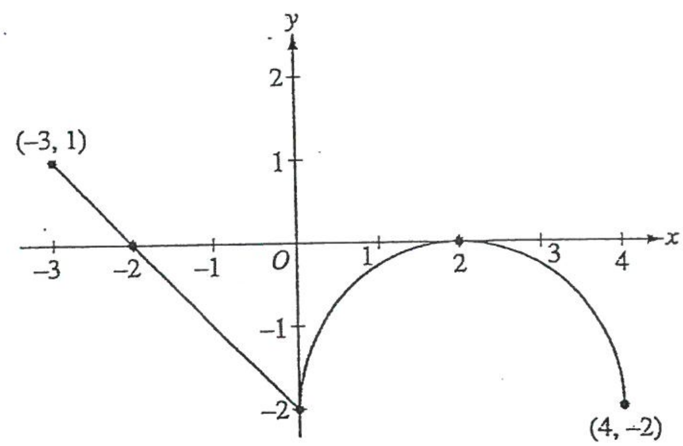
5. The graph of the function f shown above consists of a semicircle and three line segments. Let g be the function given by $g(x) = \int_{-3}^{x} f(t)\,dt$.

(a) Find $g(0)$ and $g'(0)$.

(b) Find all values of x in the open interval $(-5, 4)$ at which g attains a relative maximum. Justify your answer.

(c) Find the absolute minimum value of g on the closed interval $[-5, 4]$. Justify your answer.

(d) Find all values of x in the open interval $(-5, 4)$ at which the graph of g has a point of inflection.



Graph of f'

4. Let f be a function defined on the closed interval $-3 \le x \le 4$ with $f(0) = 3$. The graph of f', the derivative of f, consists of one line segment and a semicircle, as shown above.

(a) On what intervals, if any, is f increasing? Justify your answer.

(b) Find the x-coordinate of each point of inflection of the graph of f on the open interval $-3 < x < 4$. Justify your answer.

(c) Find an equation for the line tangent to the graph of f at the point $(0, 3)$.

(d) Find $f(-3)$ and $f(4)$. Show the work that leads to your answers.