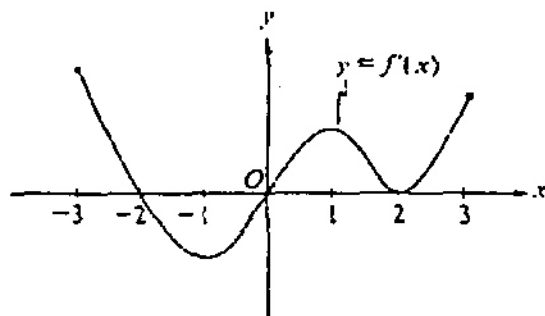


5. (1985 - AB6)

The figure shows the graph of f' , the derivative of a function f . The domain of the function f is the set of all x such that $-3 \leq x \leq 3$.

- (a) For what values of x , $-3 < x < 3$, does f have a relative maximum? A relative minimum? Justify your answer.
- (b) For what values of x is the graph of f concave up? Justify your answer.
- (c) Use the information found in parts (a) and (b) and the fact that $f(-3) = 0$ to sketch a possible graph of f .

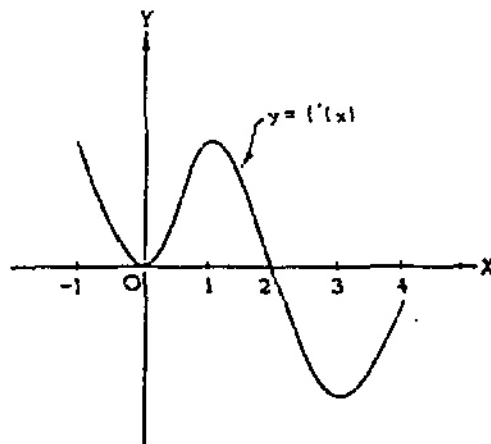


Note: This is the graph of the derivative of f , not the graph of f .

6. (1980 - BC7)

Let f be a function that has domain the closed interval $[-1, 4]$ and range the closed interval $[-1, 2]$. Let $f(-1) = -1$, $f(0) = 0$, and $f(4) = 1$. Also, let f have the derivative function f' that is continuous and that has the graph shown.

- (a) Find all values of x for which f assumes a relative maximum. Justify your answer.
- (b) Find all values of x for which f assumes its absolute minimum. Justify your answer.
- (c) Find the intervals on which the graph of f is concave downward.
- (d) Give all values of x for which f has a point of inflection.
- (e) Sketch the graph of f .



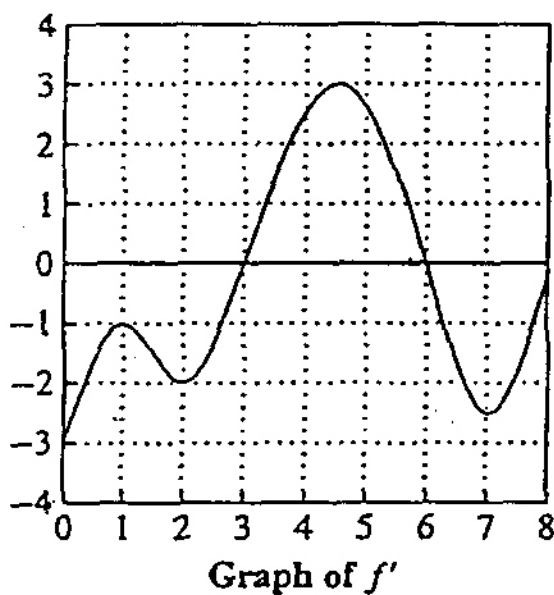
Note: This is the graph of the derivative of f , NOT the graph of f .

7.

(OZ, ex. 26, p. 142–143)

The graph of the derivative of a function f is shown below. Use the graph of f' to answer the following questions about f .

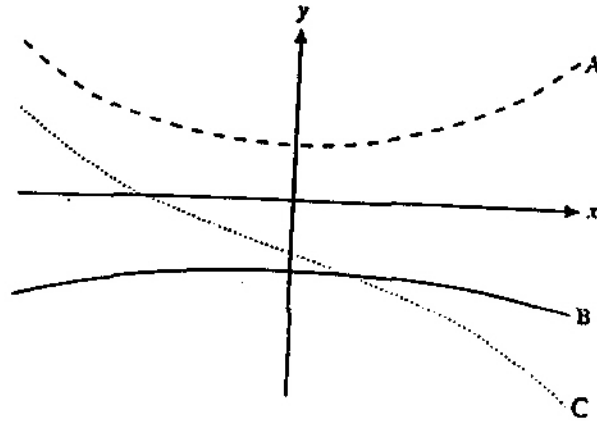
- On which intervals is f increasing? Decreasing?
- Where does f have a stationary point?
- Where does f have a local maximum? A local minimum?
- On which intervals is the graph of f concave up? Concave down?
- Where does f have a point of inflection?
- Where does f achieve its maximum value on the interval $[0, 2]$? Its minimum value?
- Where does f achieve its maximum value on the interval $[3, 6]$? Its minimum value?
- Assume $f(0) = 0$. Sketch a graph of f .
- How does your answer to part (h) change if $f(0) = 5$?



14.

(OZ, ex. 22, p. 142)

Graphs of f , f' , and g (not the derivative of f) are shown below. Which is which? Explain how you can tell.



15.

(OZ, ex. 23, p. 142)

Graphs of f , f' , and g (not the derivative of f) are shown below. Which is which? Explain how you can tell.

