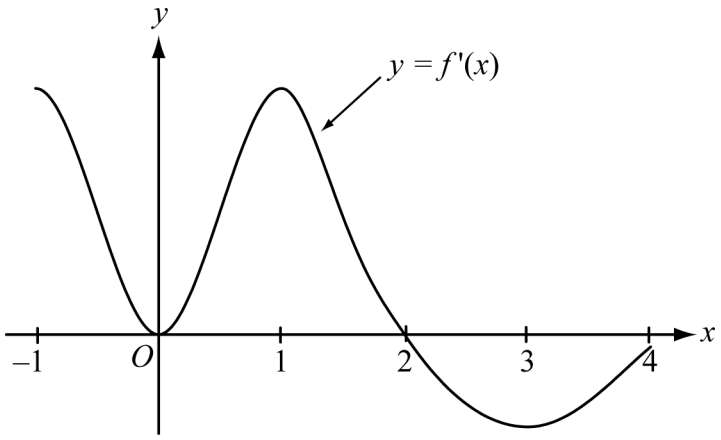
1980 BC7



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

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 in the figure above.

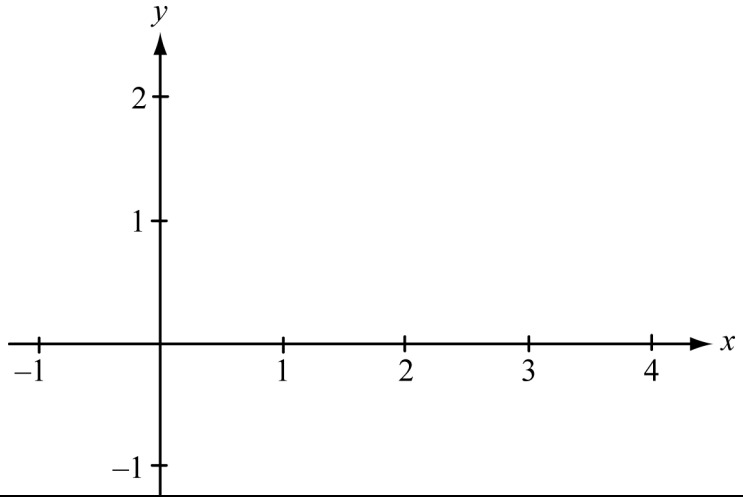
(a) Find all values of x for which f assumes a relative maximum. Justify your answer.

(b) Find all values of x for which f assumes its absolute minimum. Justify your answer.

(c) Find the intervals on which f is concave downward.

(d) Give all the values of x for which f has a point of inflection.

(e) On the axes provided, sketch the graph of f.



Note: The graph of f' has been slightly modified from the original on the 1980 exam to be consistent with the given values of f at $x = -1$, $x = 0$, and $x = 4$.