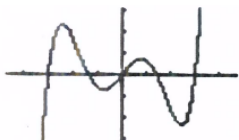


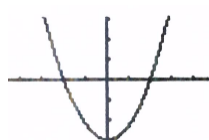
Match each graph of the function in the top row with the graph on the function's first derivative in the bottom row. Each choice will be used once. Write the letter in capital letters.

Function:

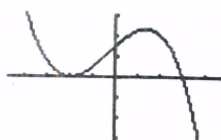
_____ 1)



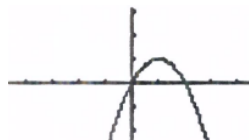
_____ 2)



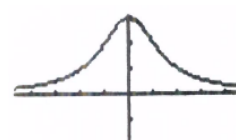
_____ 3)



_____ 4)



_____ 5)



First Derivative:

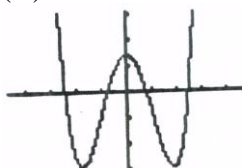
(A)



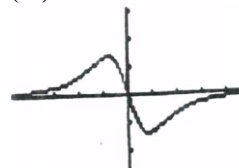
(B)



(C)



(D)



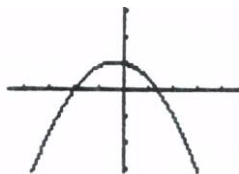
(E)



Match each graph of the function's second derivative in the top row with the function in the bottom row. Each choice will be used once. Write the letter in capital letters.

Second Derivative:

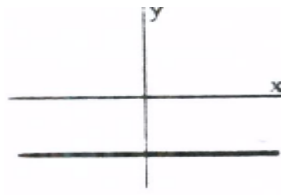
_____ 6)



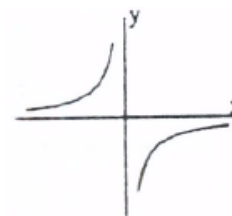
_____ 7)



_____ 8)

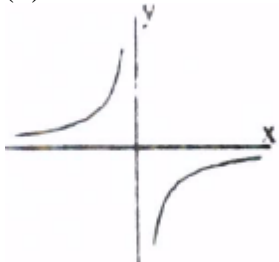


_____ 9)

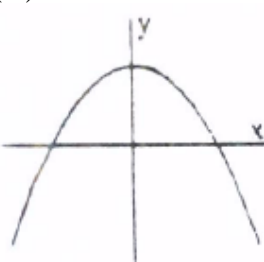


Function:

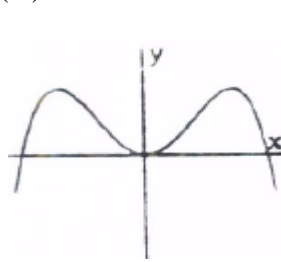
(F)



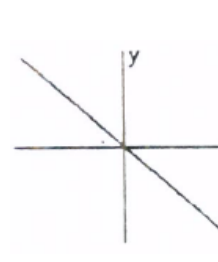
(G)



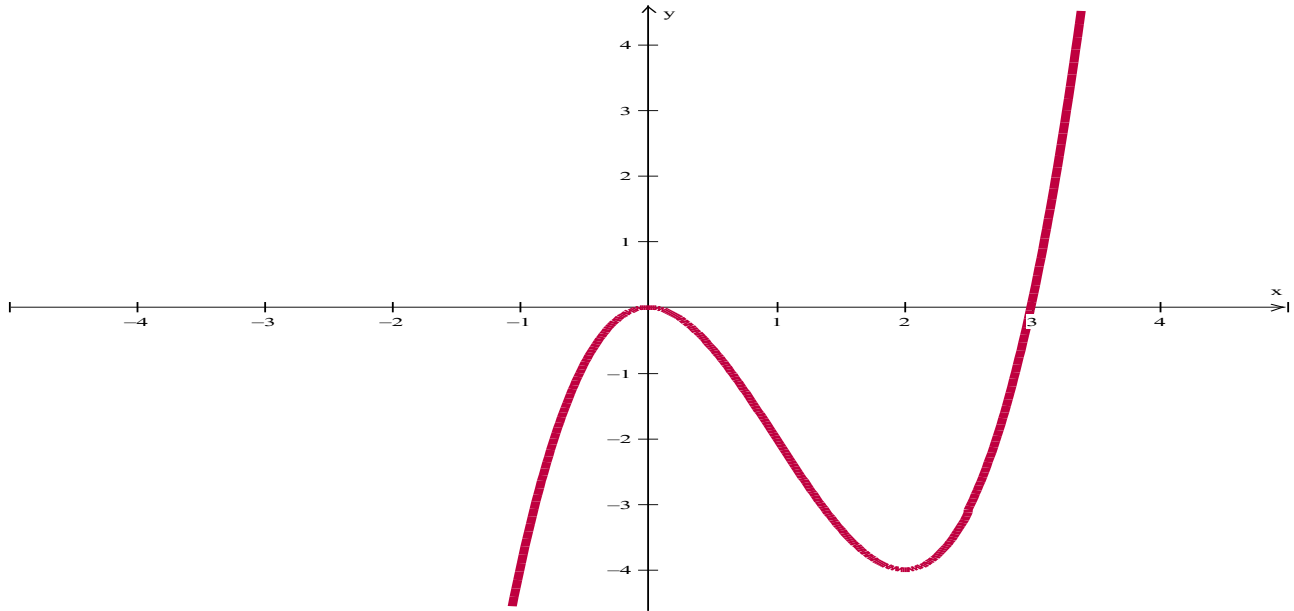
(H)



(J)

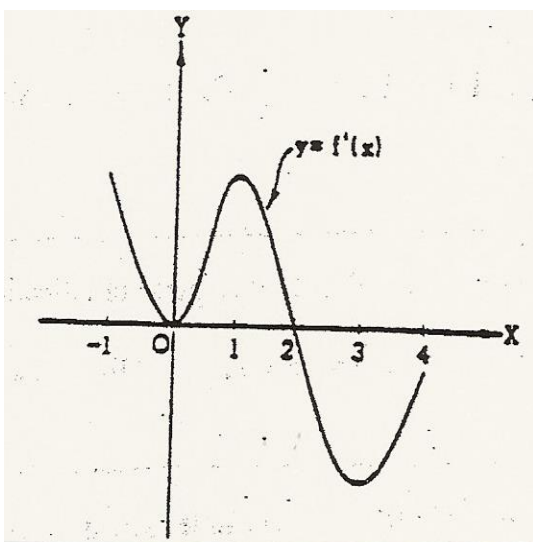


10) The graph of function $f(x)$ is given. Establish the x and y -intercept(s), critical numbers, possible points of inflection, increasing and decreasing intervals, and concave intervals. **Then, sketch the derivative graph.**



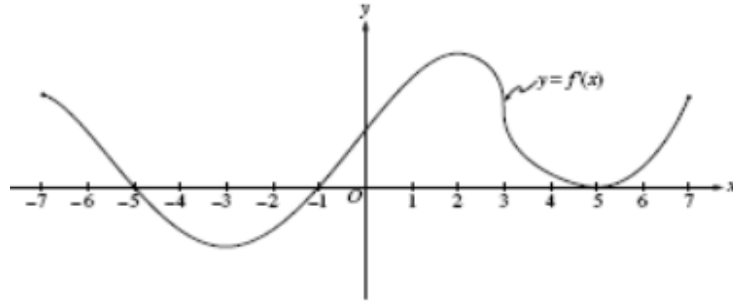
X-intercept(s):	Increasing Intervals:
Y-intercept(s):	Decreasing Intervals:
Critical Points:	Points of Inflection: (Changes Concavity)
Relative Max:	Intervals of Concave Up:
Relative Min:	Intervals of Concave Down:

11) 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 has the derivative function f' that is continuous and that has the graph shown in the figure.



- Find all values of x for which f assumes a relative maximum. Justify your answer.
- Find all values of x for which f assumes a relative minimum. Justify your answer.
- Find the intervals on which f is concave downward. Justify your answer.
- Give all values of x for which f has a point of inflection. Justify your answer.
- Sketch the graph of f on a separate graph.

- 12) The figure above shows the graph of f' , the derivative of the function f , for $[-7,7]$. The graph of f' has a horizontal tangent line at $x = -3$, $x = 2$, and $x = 5$ and a vertical tangent line at $x = 3$.



- (a) Find all values of x , for $(-7,7)$, at which f attains a relative minimum. Justify answer.

- (b) Find all values of x , for $(-7,7)$, at which f attains a relative maximum. Justify answer.

- (c) Find all values of x , for $(-7,7)$, at which $f''(x) < 0$.

13) Let f be a function that is even and continuous on the closed interval $[-3,3]$. The function f and its derivatives have the properties indicated in the table below:

	0	(0,1)	1	(1,2)	2	(2,3)
$f(x)$	1	Positive	0	Negative	-1	Negative
$f'(x)$	Undefined	Negative	0	Negative	Undefined	Positive
$f''(x)$	Undefined	Positive	0	Negative	Undefined	Negative

(a) Find the x -coordinate of each point at which f attains an absolute maximum value or an absolute minimum value. For each x -coordinate you give, state whether f attains an absolute maximum or absolute minimum.

(b) Find the x -coordinate at each point of inflection on the graph of f . Justify your answer.

(c) In the xy -plane provided below, sketch the graph of a function with the characteristics of f .

