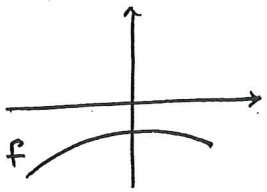
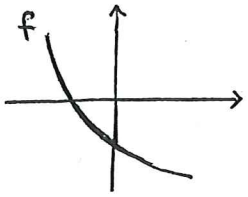
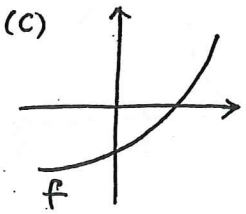
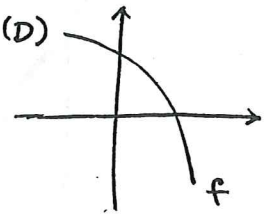
Test Your Understanding

1) For which curve below are both f' and f'' negative?

(A) 

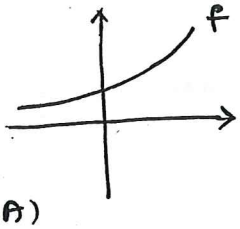
(B) 

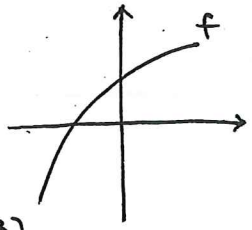
(C) 

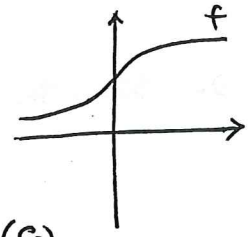
(D) 

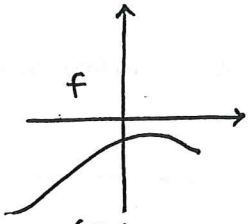
2) For which curve above is f'' positive but f' negative?

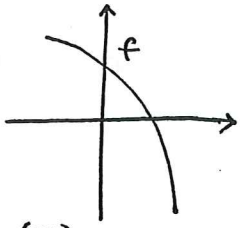
3) If y is a function such that $y' > 0$ for all x and $y'' < 0$ for all x, which of the following could be part of the graph of $y = f(x)$?

(A) 

(B) 

(C) 

(D) 

(E) 

4) Choose the correct word that completes the statement.

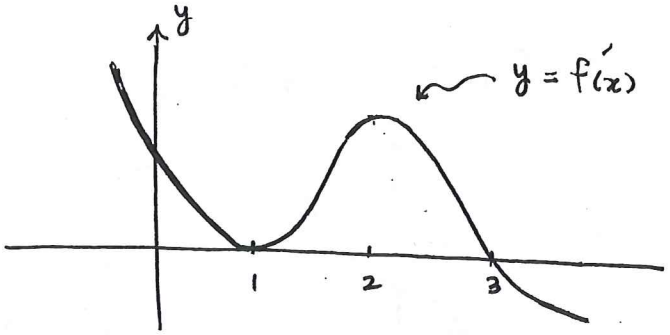
(a) If f changes from concave ____ to concave ____ at $x = c$, then f has a/an ____ point.

(A) down – up – local min
(B) down – up – inflection point
(C) up – down – local max
(D) increase – decrease – local max.

(b) If f' is increasing on an interval, then f'' is ____ on that interval and graph of f is ____.

(A) negative – concave down
(B) negative – concave up
(C) positive – concave up
(D) concave up – positive

5) The graph of f' is shown below.



(a) List the critical numbers of $f(x)$.

(b) On the interval _____ $f'(x)$ is positive and on the interval _____ $f'(x)$ is negative.

(c) f is increasing on the interval _____ and decreasing on _____.

(d) List the local max and min of $f(x)$.

(e) Determine the intervals where f is concave up / down.

(f) List the inflection points of f.

(g) What is the slope of the tangent line to curve of f at $x=1$?