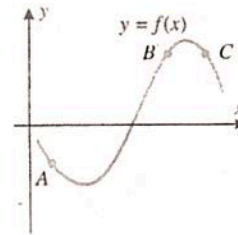
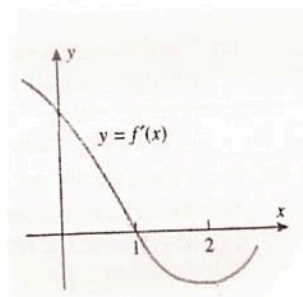


Name: \_\_\_\_\_ Date: \_\_\_\_\_  
 AP Calc AB: Testing for relative extrema and points of inflection homework

1. Use the graph of the equation  $y = f(x)$  in the accompanying diagram to find the signs of  $\frac{dy}{dx}$  and  $\frac{d^2y}{dx^2}$  at the points  $A$ ,  $B$ , and  $C$ .

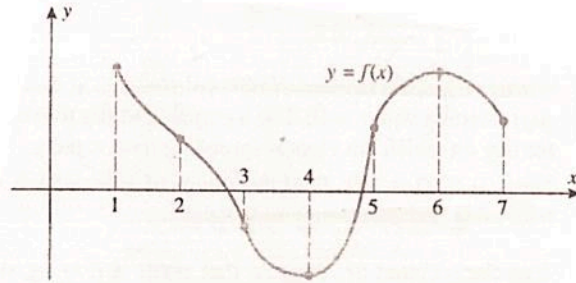


2. Use the graph of  $y = f'(x)$  in the accompanying figure to replace the question marks with  $<$ ,  $=$ , or  $>$ , as appropriate. Explain your reasoning.



- |                   |                   |                  |
|-------------------|-------------------|------------------|
| (a) $f(0) ? f(1)$ | (b) $f(1) ? f(2)$ | (c) $f'(0) ? 0$  |
| (d) $f'(1) ? 0$   | (e) $f''(0) ? 0$  | (f) $f''(2) ? 0$ |

3. In each part, use the graph of  $y = f(x)$  in the accompanying figure to find the requested information.
- Find the intervals on which  $f$  is increasing.
  - Find the intervals on which  $f$  is decreasing.
  - Find the open intervals on which  $f$  is concave up.
  - Find the open intervals on which  $f$  is concave down.
  - Find all values of  $x$  at which  $f$  has an inflection point.



For questions 4-6,

- Find the intervals on which  $f$  is increasing.
- Find the intervals on which  $f$  is decreasing.
- Find the open intervals on which  $f$  is concave up.
- Find the open intervals on which  $f$  is concave down.
- Find all values of  $x$  at which  $f$  has an inflection point.
- Find the  $x$  values of any relative minimums.
- Find the  $x$  values of any relative maximums.

4.  $f(x) = x^2 - 5x + 6$

5.  $f(x) = 3x^4 - 4x^3$

6.  $f(x) = \frac{x^2}{x^2 + 2}$

7. Use the graph of  $y = f''(x)$  in the accompanying figure to determine the  $x$ -coordinates of all inflection points of  $f$ . Explain your reasoning.

