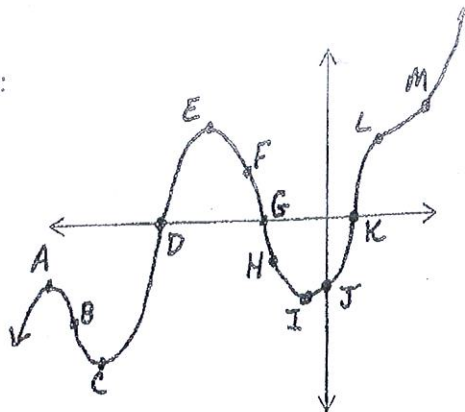


U2H9

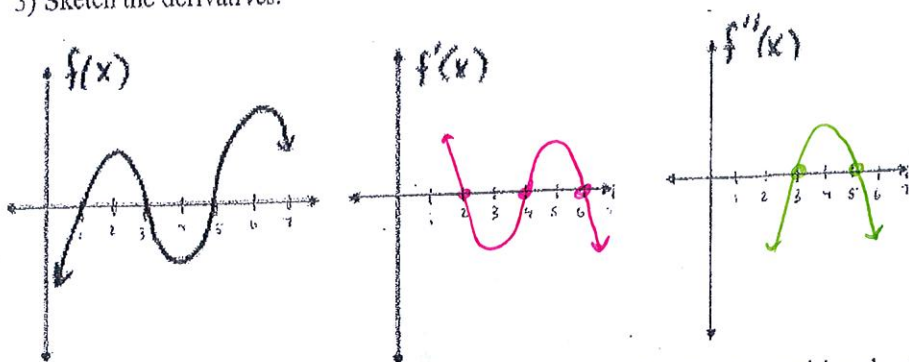
Given the graph of $f(x)$, at what points is:

- 1) $f'(x) > 0$ but finite
D, J, L, M
- 2) $f(x) = 0$ and $f'(x) > 0$
D (+K)
- 3) $f'(x) < 0$ but finite
B, F, G, H



Note there is a vertical tangent at K.

3) Sketch the derivatives.



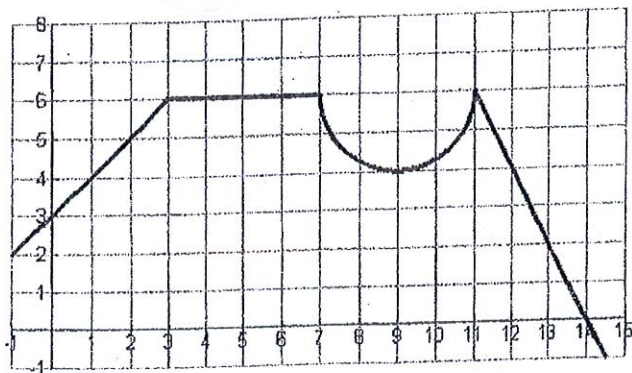
4) Look where the function $f(x)$ is increasing (where the function has positive slope). Where are these values located on the first derivative graph?
above the x-axis

5) Look where the function $f(x)$ is decreasing (where the function has negative slope). Where are these values located on the first derivative graph?
below the x-axis

6) Look where the function $f(x)$ is neither increasing nor decreasing (where the function has a slope of zero). Where are these values located on the first derivative graph?
on x-axis

7) Look where the first derivative $f'(x)$ is increasing (positive slope). Where are these values located on the second derivative graph?
above x-axis

8.

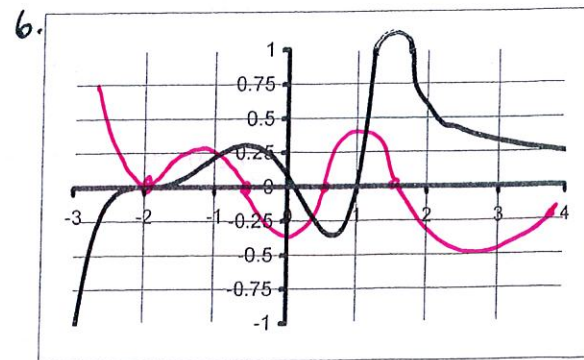
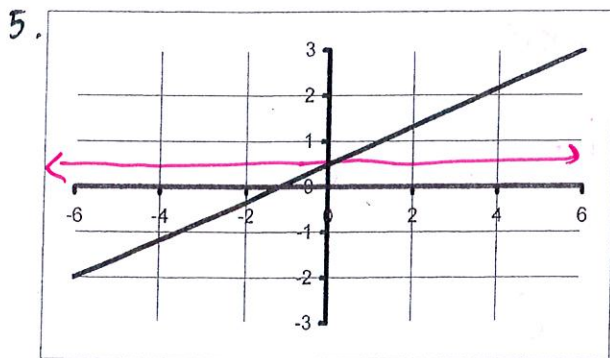
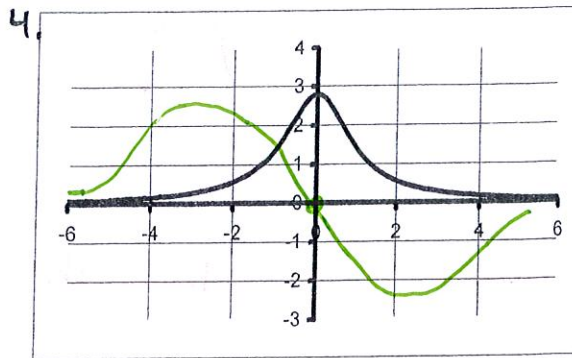
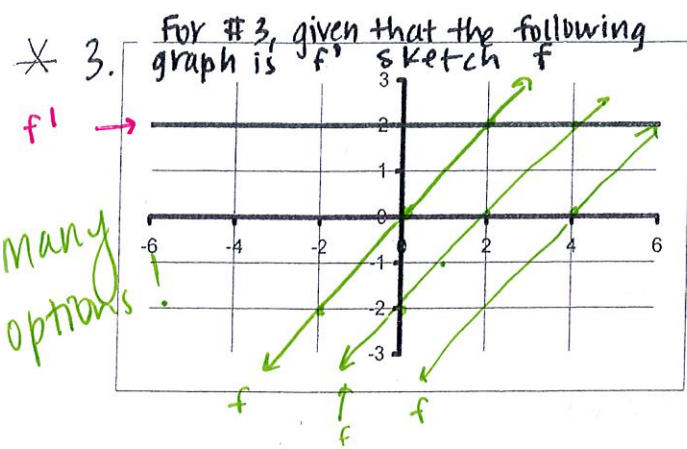
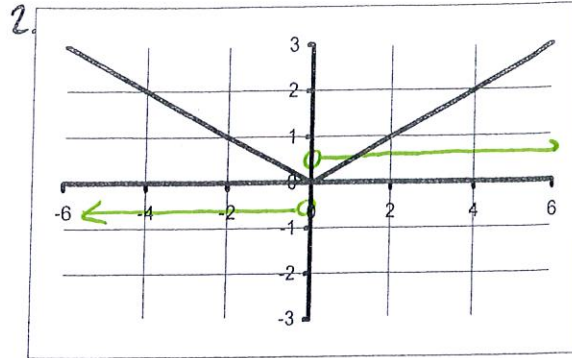
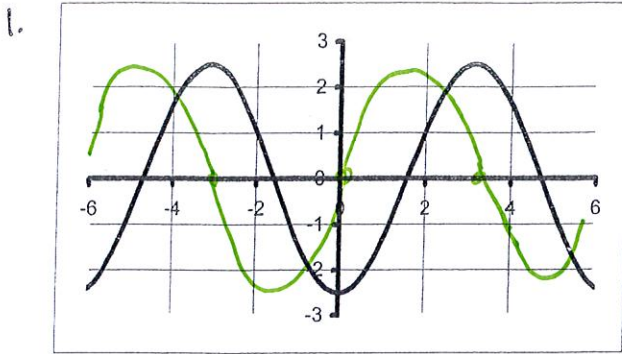


Determine:

- A. $f'(1) = 1$
- B. $f'(5) = 0$
- C. $f'(9) = 0$
- D. $f'(12) = -2$
- E. Where does the derivative not exist? **$x = 3, 7, 11$**
- F. $f'(10)$ is positive? negative?

DERIVATIVE GRAPHS

Sketch the graph of the derivative of each of the following functions.



7.

