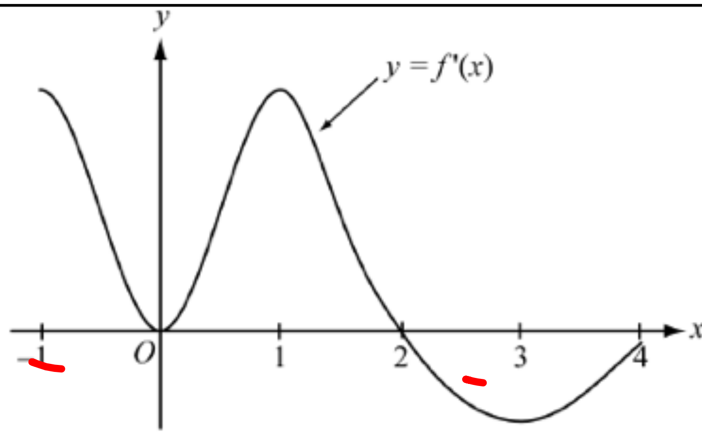



Note: This is the graph of the derivative of $f$, NOT the graph of $f$.

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.

x=2, f' + → −

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

x= −1, when critical pts (x=0, 2) & end pts x=−1, 4,

f assumed the min at x=−1

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

f' is dec.

(−1, 0) U (1, 3)

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

Local ext. of f'

PoI of f

x=0, 1, 3

as f' either inc then dec

or

dec then inc

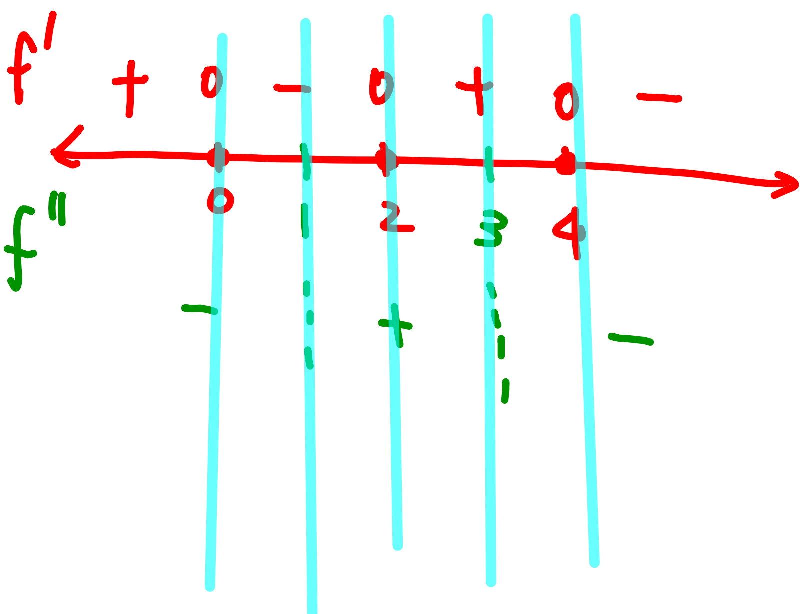
**December 5, 2019**

**25.** $f'(0) = f'(2) = f'(4) = 0$,

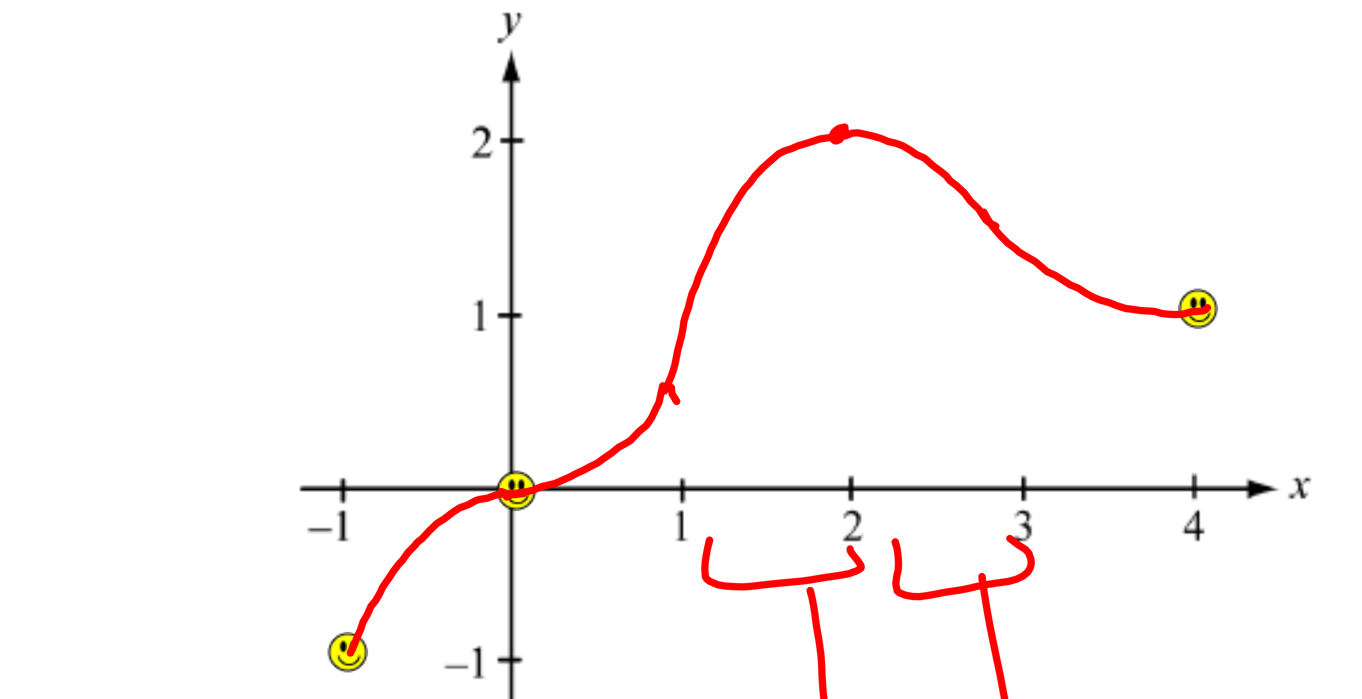
$f'(x) > 0$ if $x < 0$ or $2 < x < 4$,

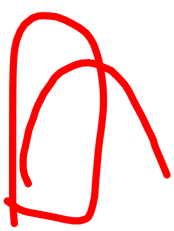
$f'(x) < 0$ if $0 < x < 2$ or $x > 4$,

$f''(x) > 0$ if $1 < x < 3$, $\quad f''(x) < 0$ if $x < 1$ or $x > 3$



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



$f''<0$ $f''>0$ $f''<0$ $f''<0$ $f''>0$

$f'>0$ $f'>0$ $f'>0$ $f'<0$ $f'<0$