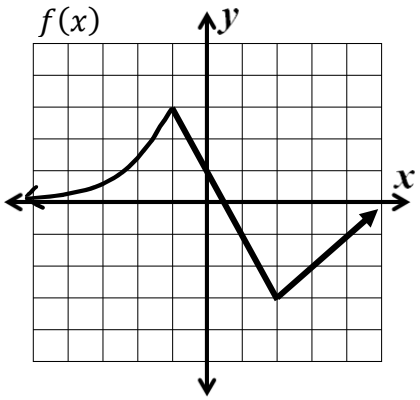
5.8 Sketching Graphs of Derivatives

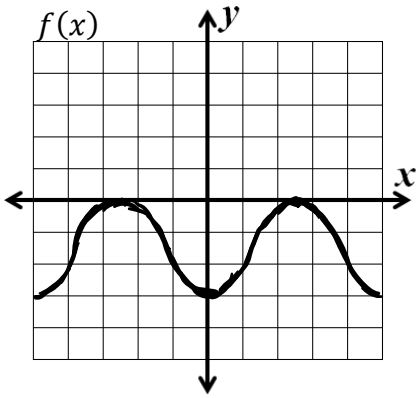
Calculus Name: _____ **CA #1**

The graph of a function f is shown. On the same coordinate plane, sketch a graph of f', the derivative of f.

1.

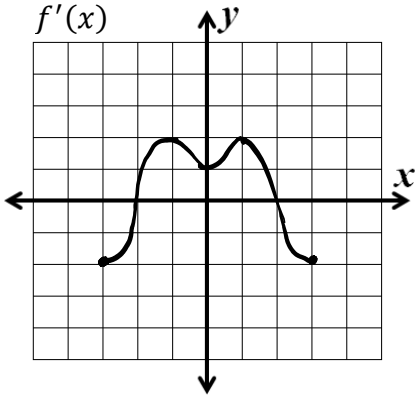


2.

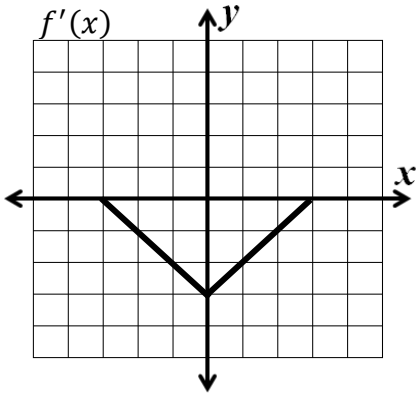


The graph of f', the derivative of f, is shown. On the same coordinate plane, sketch a possible graph of f.

3.

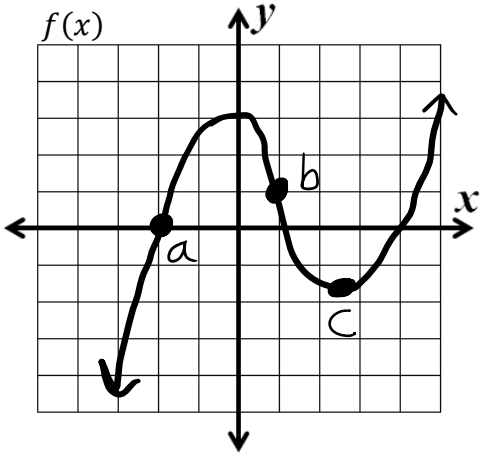


4.



Place the values of $f(x)$, $f'(x)$, and $f''(x)$ in increasing order for each point on the graph of $f(x)$. For these problems, if the point appears to be a max, min, or point of inflection assume it is.

5.



6. f is an even function, continuous on the closed interval $[-3, 3]$, and satisfies the following.

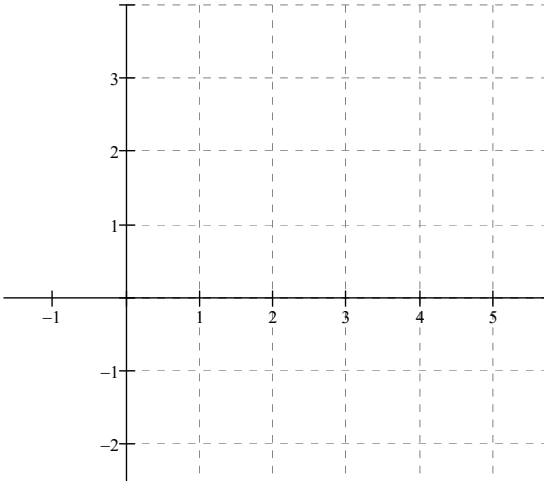
x	0	$0 < x < 1$	1	$1 < x < 2$	2	$2 < x < 3$
$f(x)$	2	Pos.	0	Neg.	-1	Neg.
$f'(x)$	Und.	Neg.	0	Neg.	Und.	Pos.
$f''(x)$	Und.	Pos.	0	Neg.	Und.	Neg.

(a) Find the all extrema of f (the coordinate points) on the interval $0 < x < 3$.

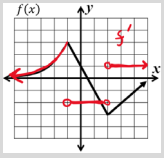
(b) Find any points of inflection on the interval $0 < x < 3$..

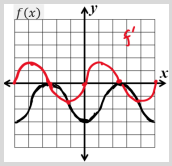
(c) Sketch a possible graph of f.

(d) What can you conclude about $f(3)$ and $f(-3)$?



Answers to 5.8 CA #1

1.


2.


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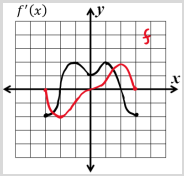

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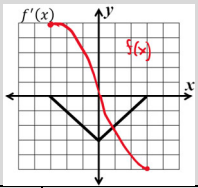
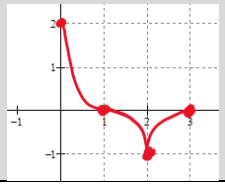


5.
$f''(a) < f(a) < f'(a)$
$f'(b) < f''(b) < f(b)$
$f(c) < f'(c) < f''(c)$

6a. Min at $(2, -1)$

6b. Pt of Inf: $(1,0)$

6c.


6d. $f(3) = 0$ and $f(-3) = 0$ because f is even.