

# Today

---

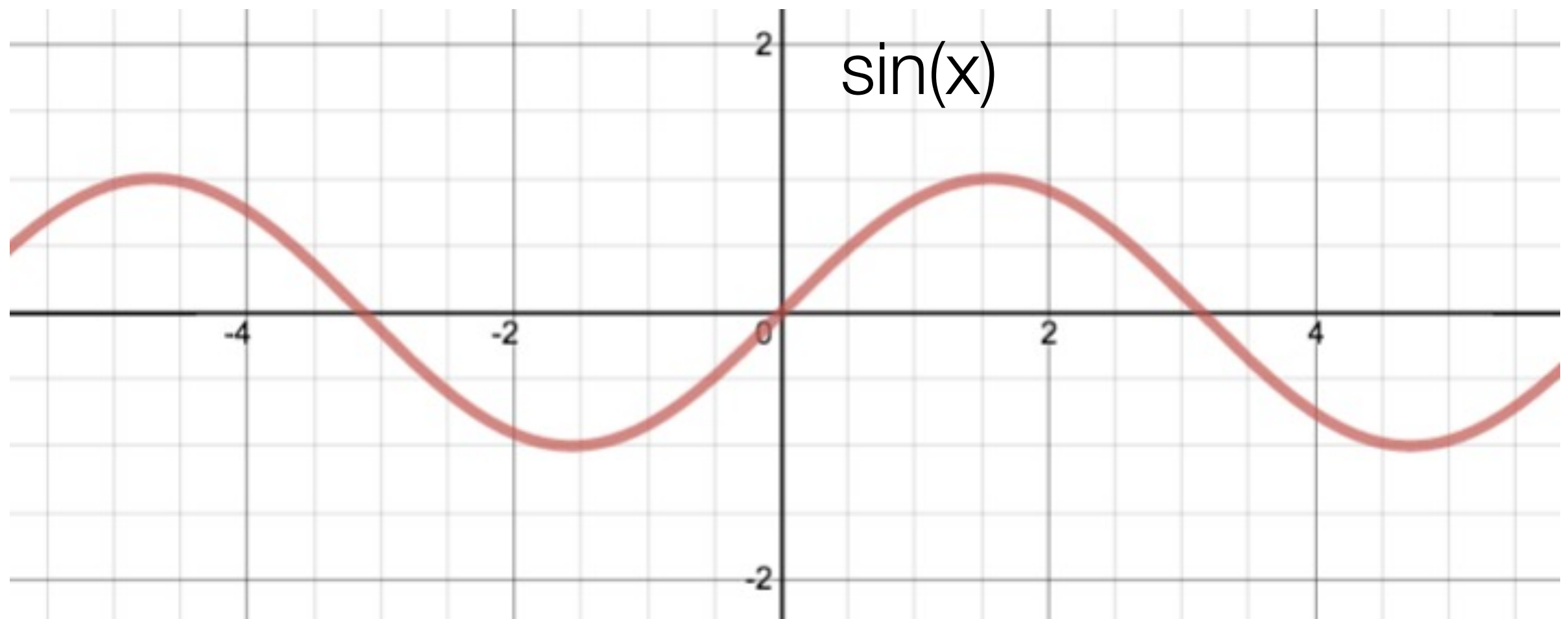
- Sketching graphs by hand and by spreadsheet.
- Reminders:
  - PL3.3 for Friday
  - Assignment 2 for Thursday
  - OSH in a week and a half
  - Midterm 1 in two weeks - 1 day!

Sketch the derivative of  $f(x) = |\sin(x)|$

---

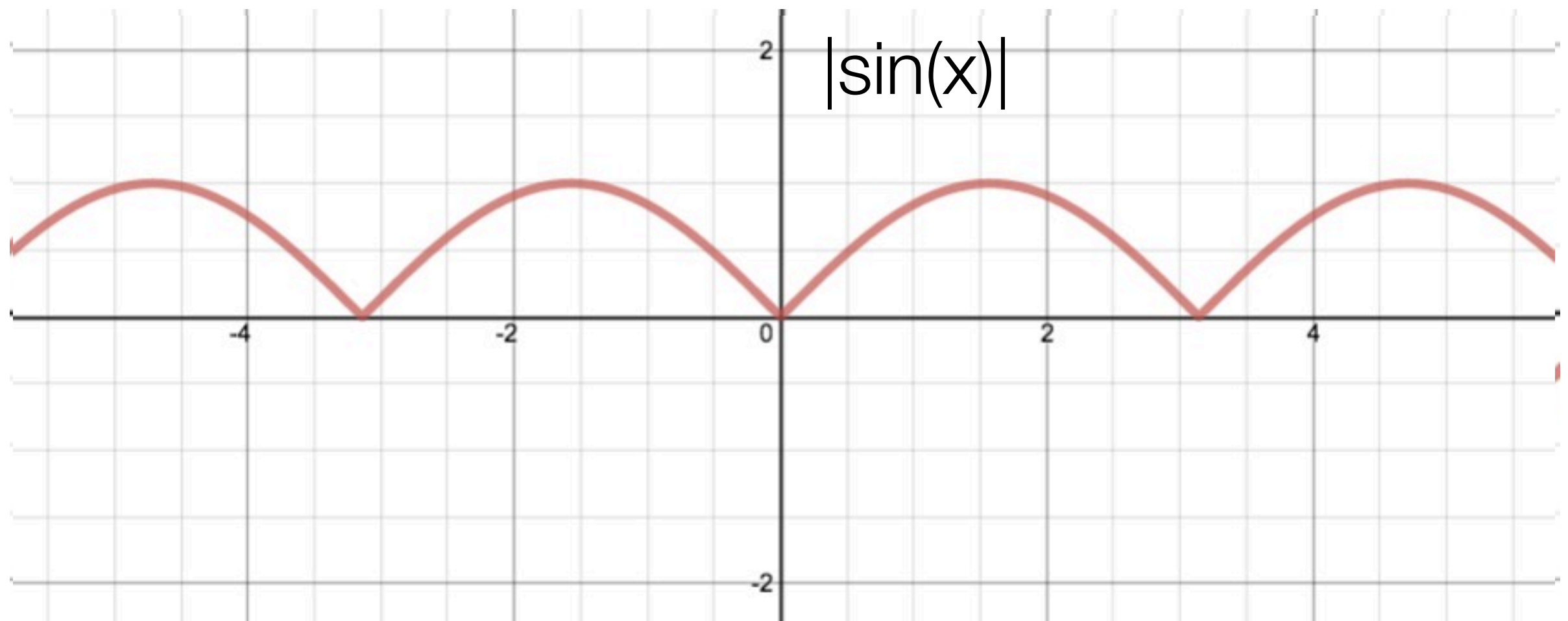
Sketch the derivative of  $f(x) = |\sin(x)|$

---



Sketch the derivative of  $f(x) = |\sin(x)|$

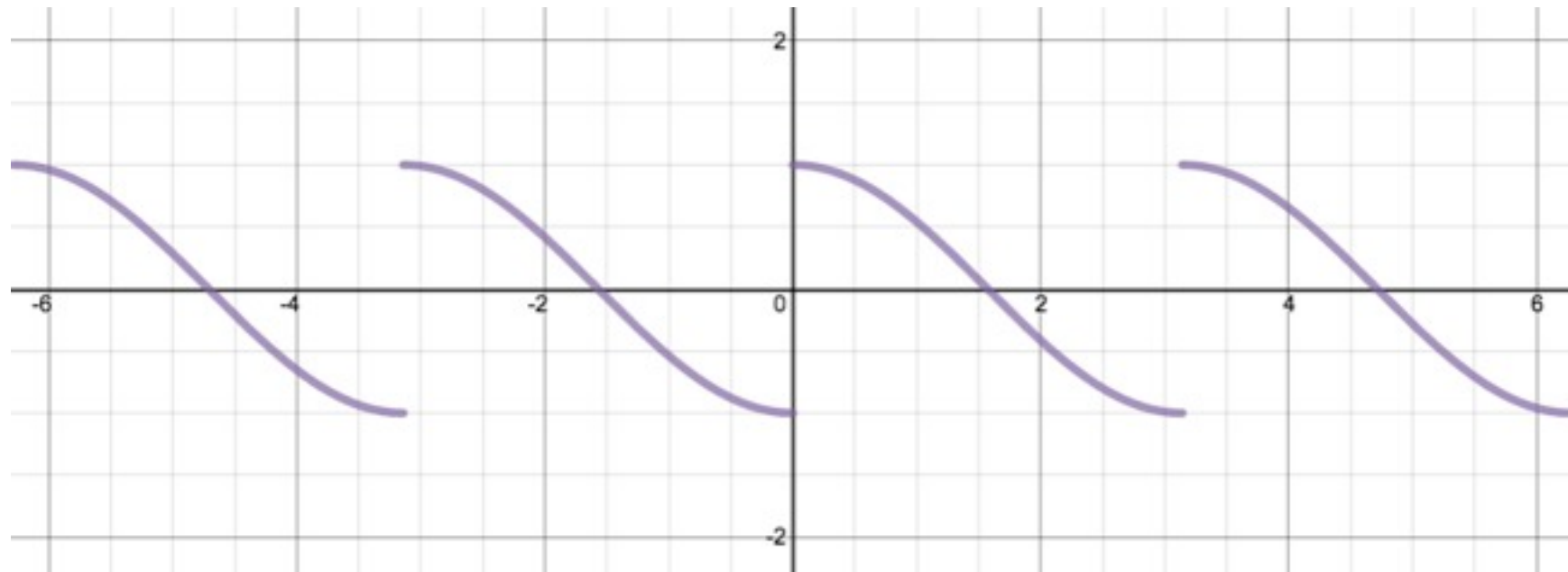
---



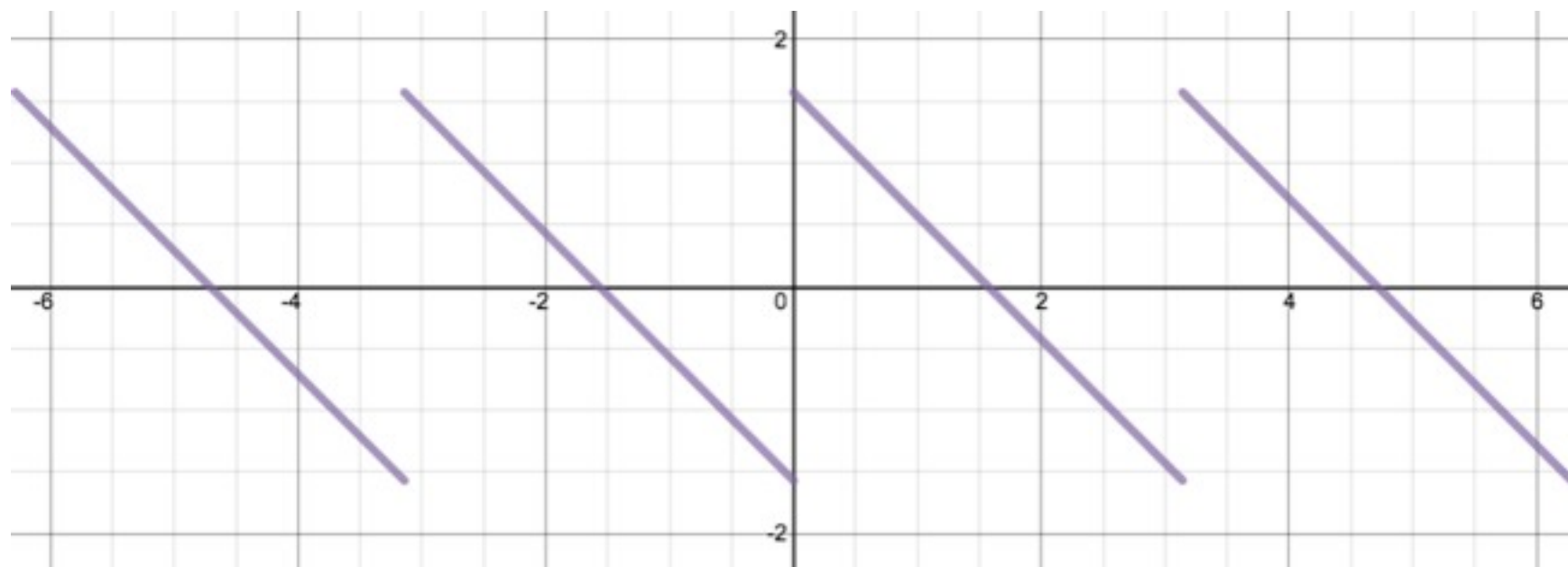
Sketch the derivative of  $f(x) = |\sin(x)|$

---

(A)

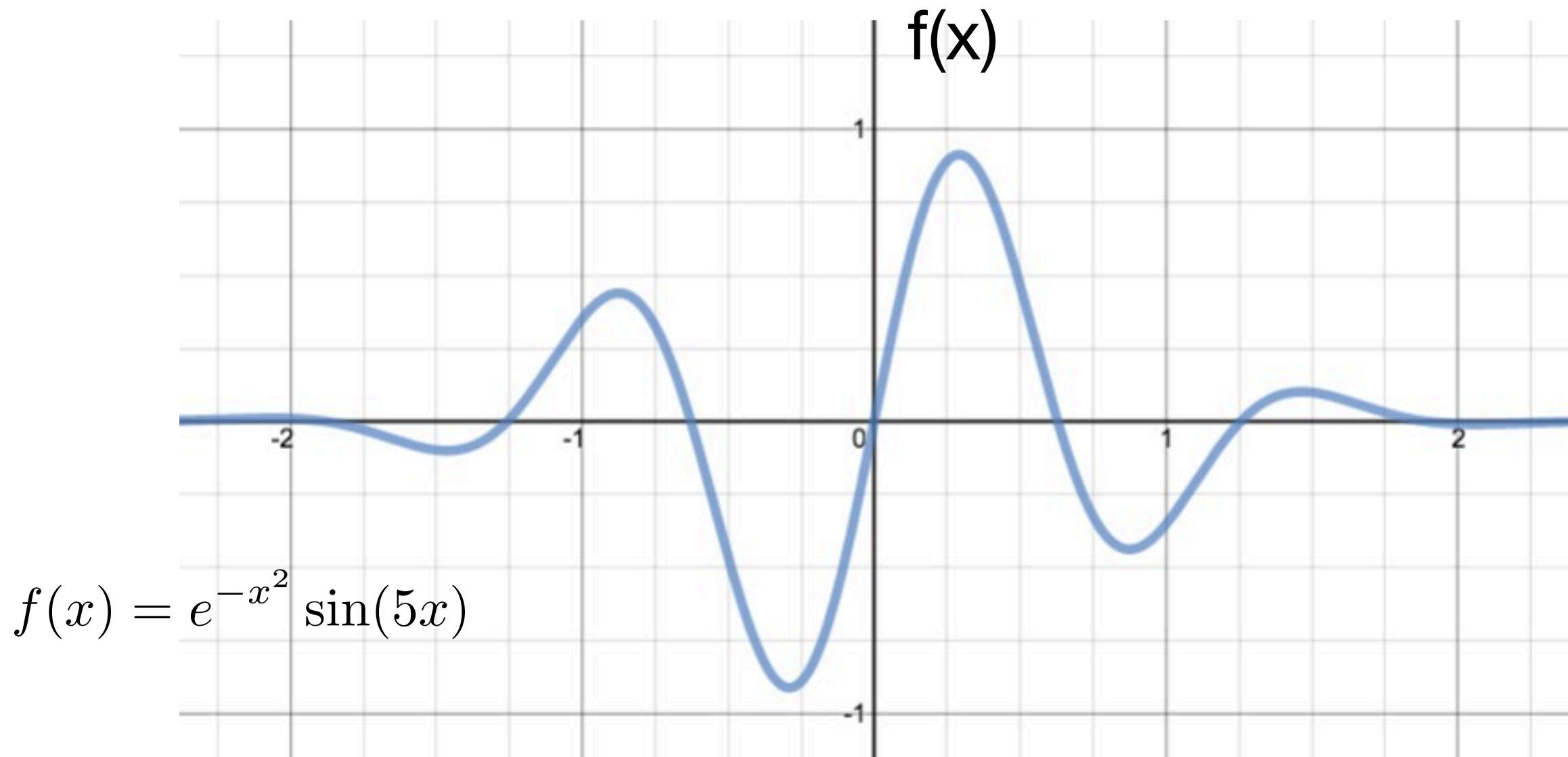


(B)



Sketch  $f'(x)$  for the function  $f(x)$  given below.

---

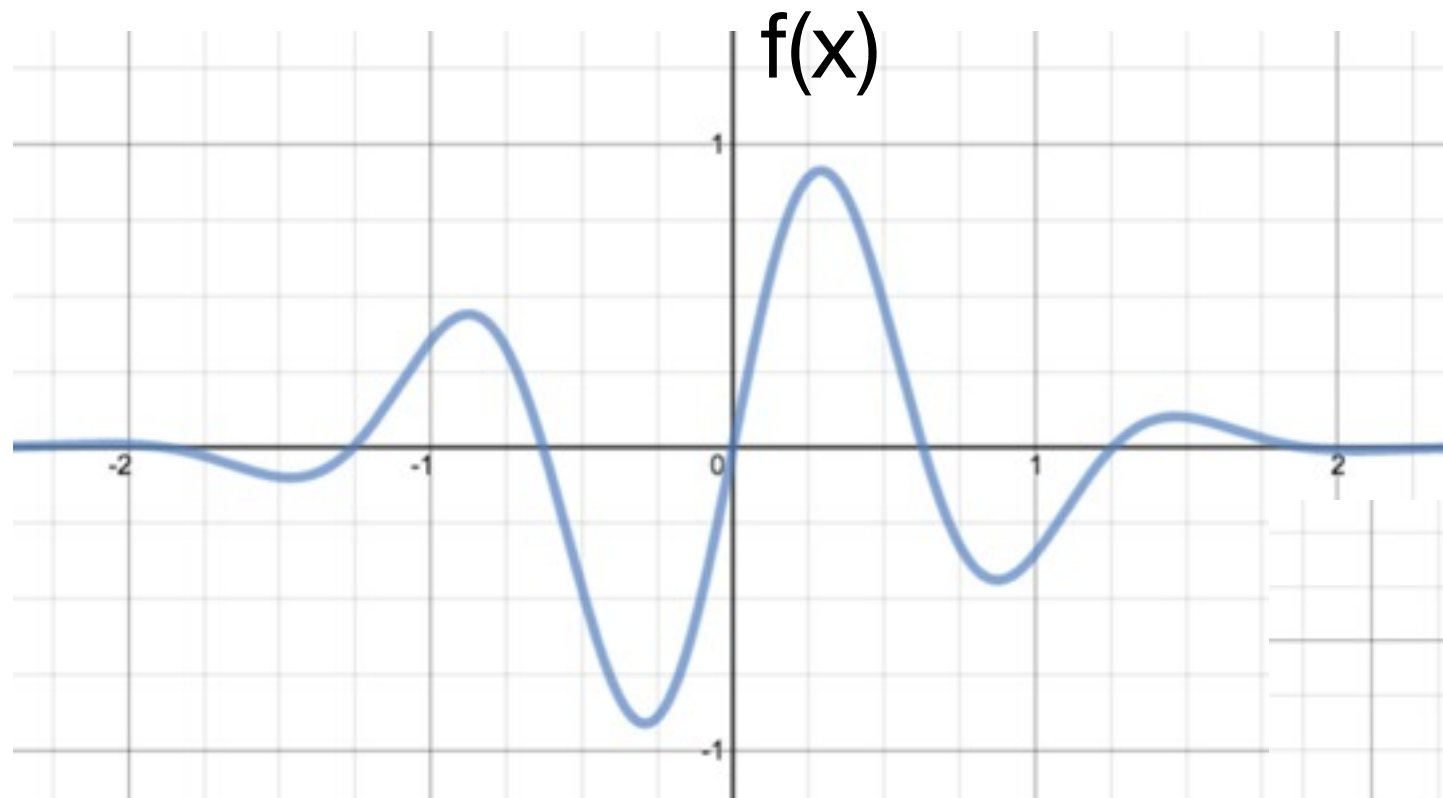


- Make sure to include a vertical scale on your graph so that it is possible to see, for example, what is the maximum slope of  $f(x)$ .

(A) I'm still working on it.

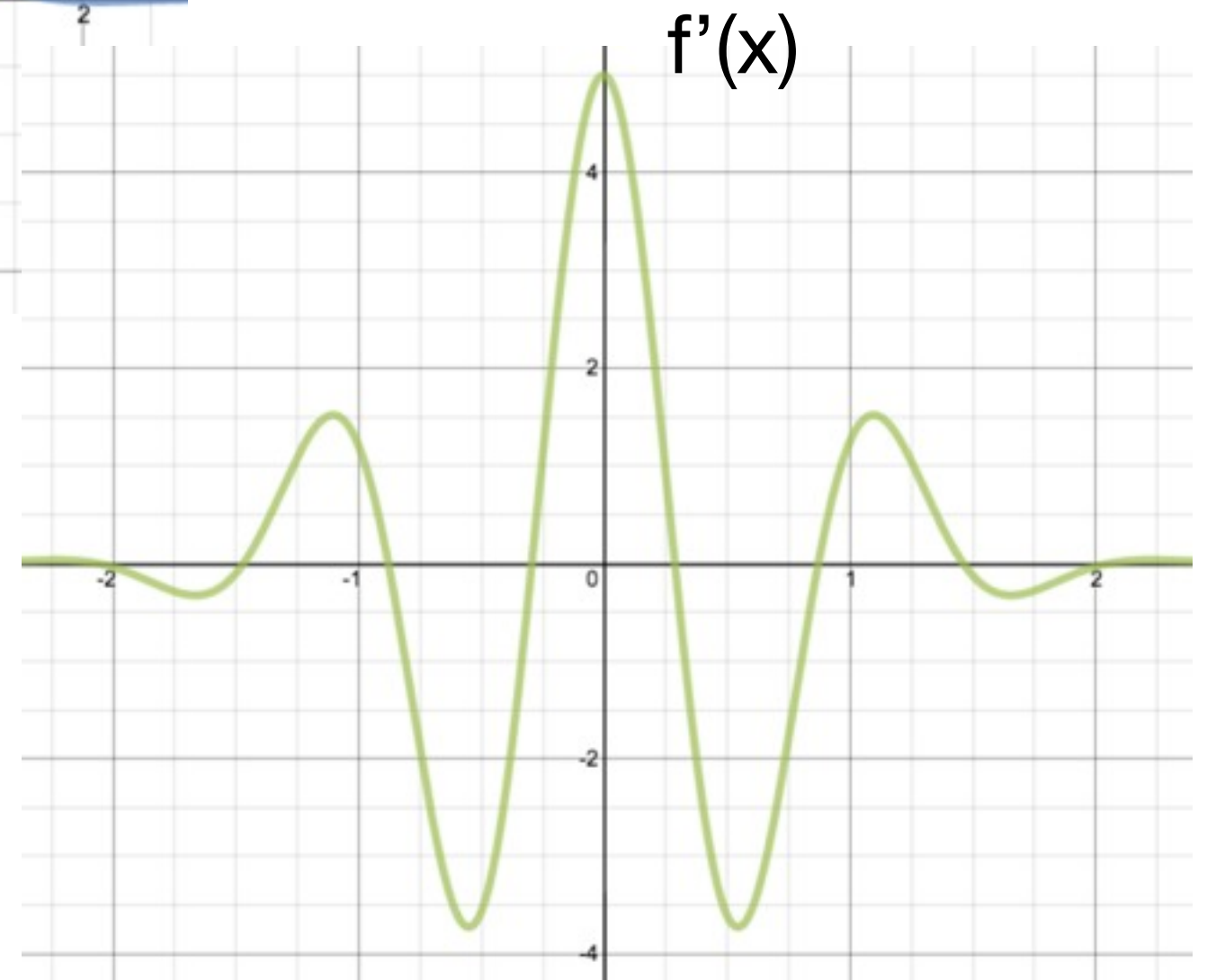
(B) I'm finished.

Sketch  $f'(x)$  for the function  $f(x)$  given below.

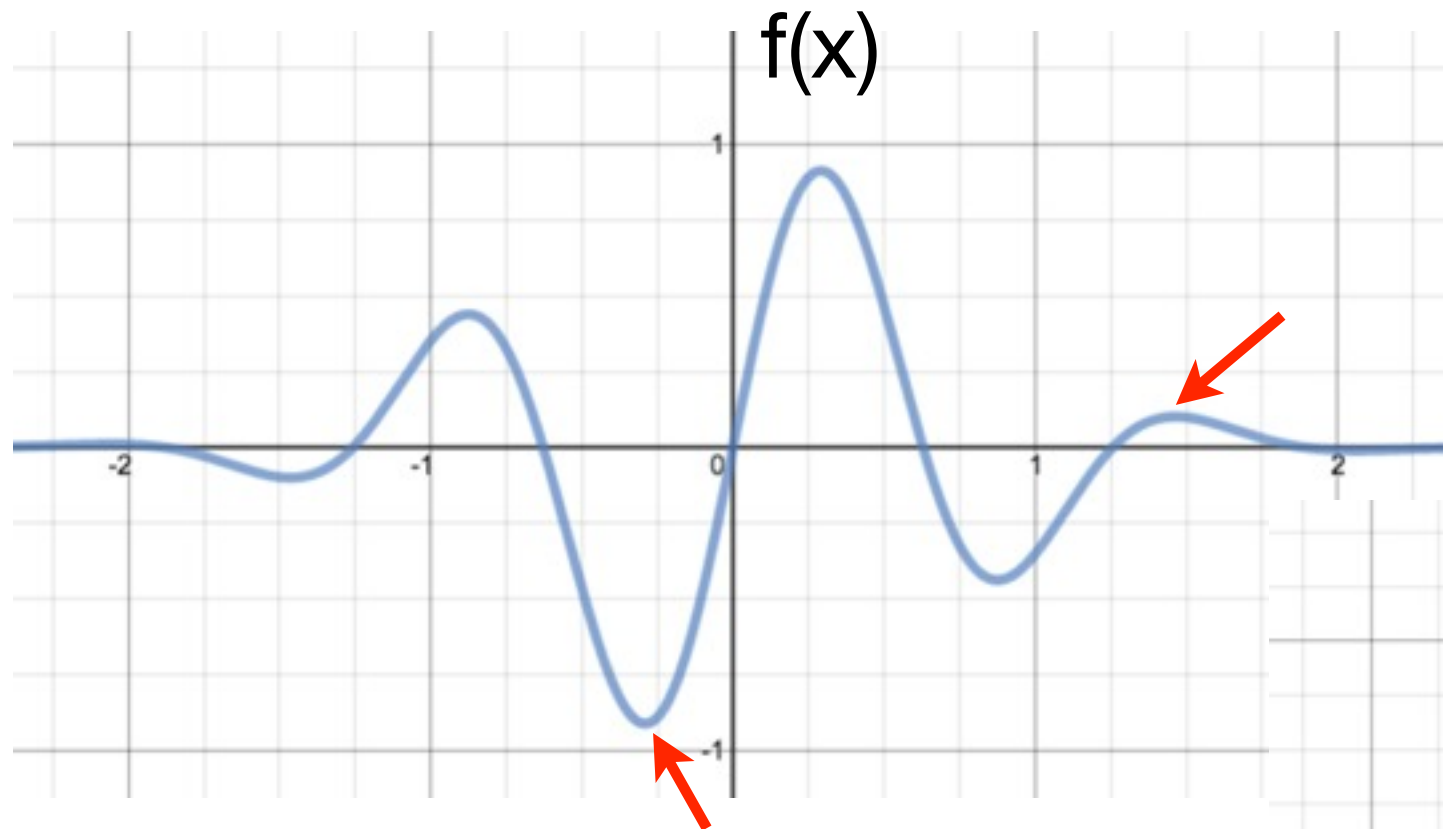


(A) My graph shows this.

(B) Oops.



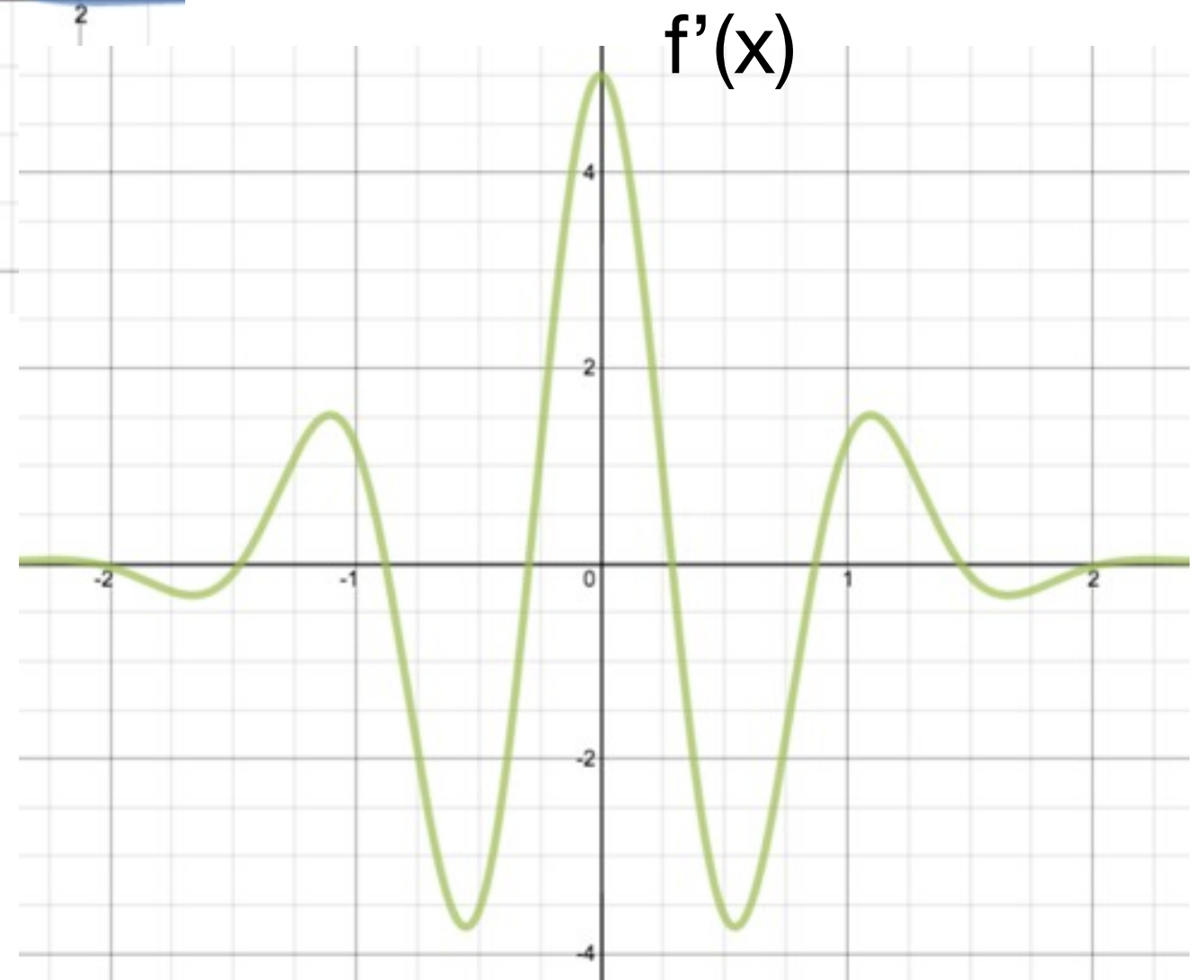
Sketch  $f'(x)$  for the function  $f(x)$  given below.



(A) My graph shows this.

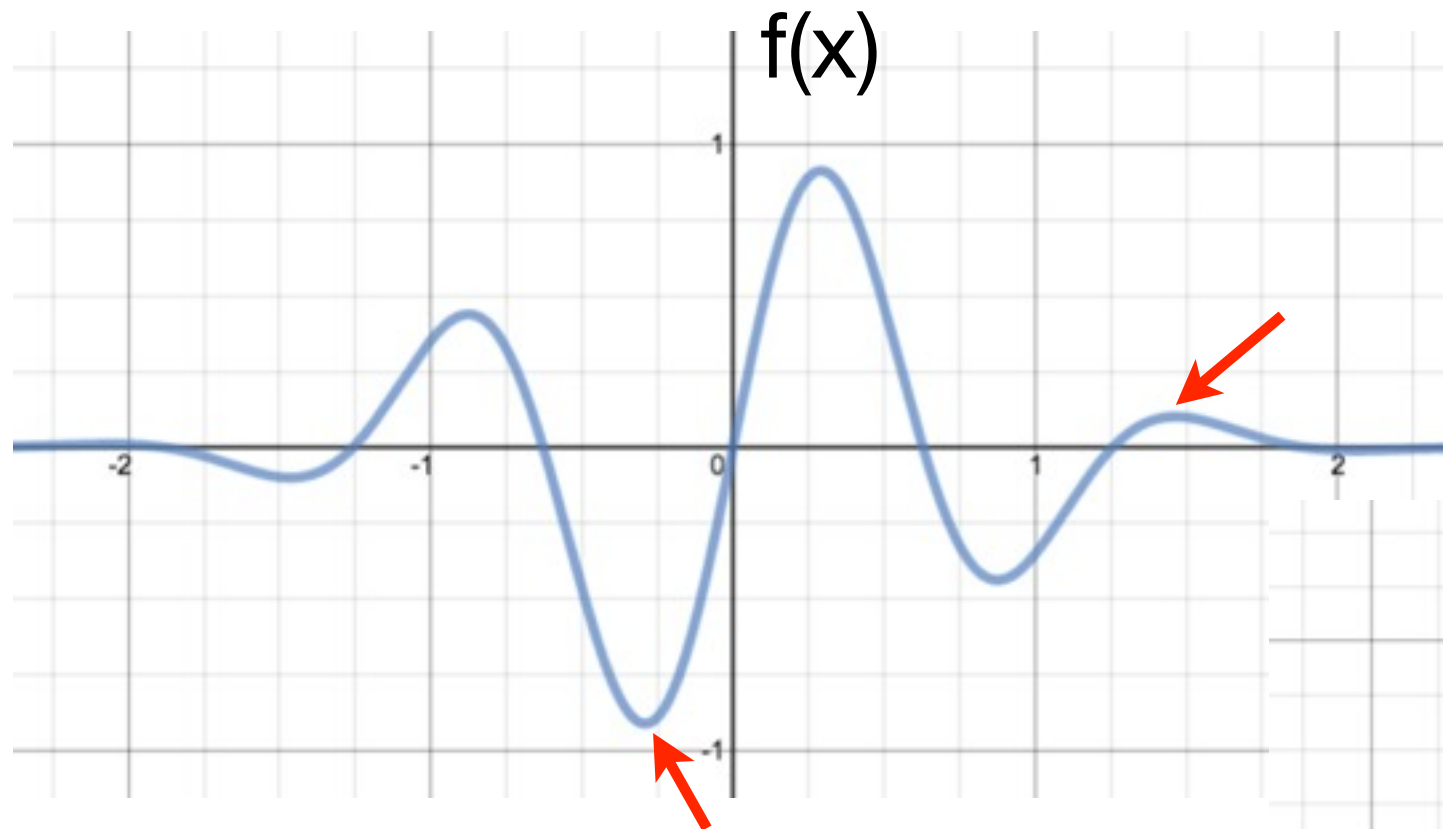
(B) Oops.

- High and low points (mins and maxes) have zero slope.





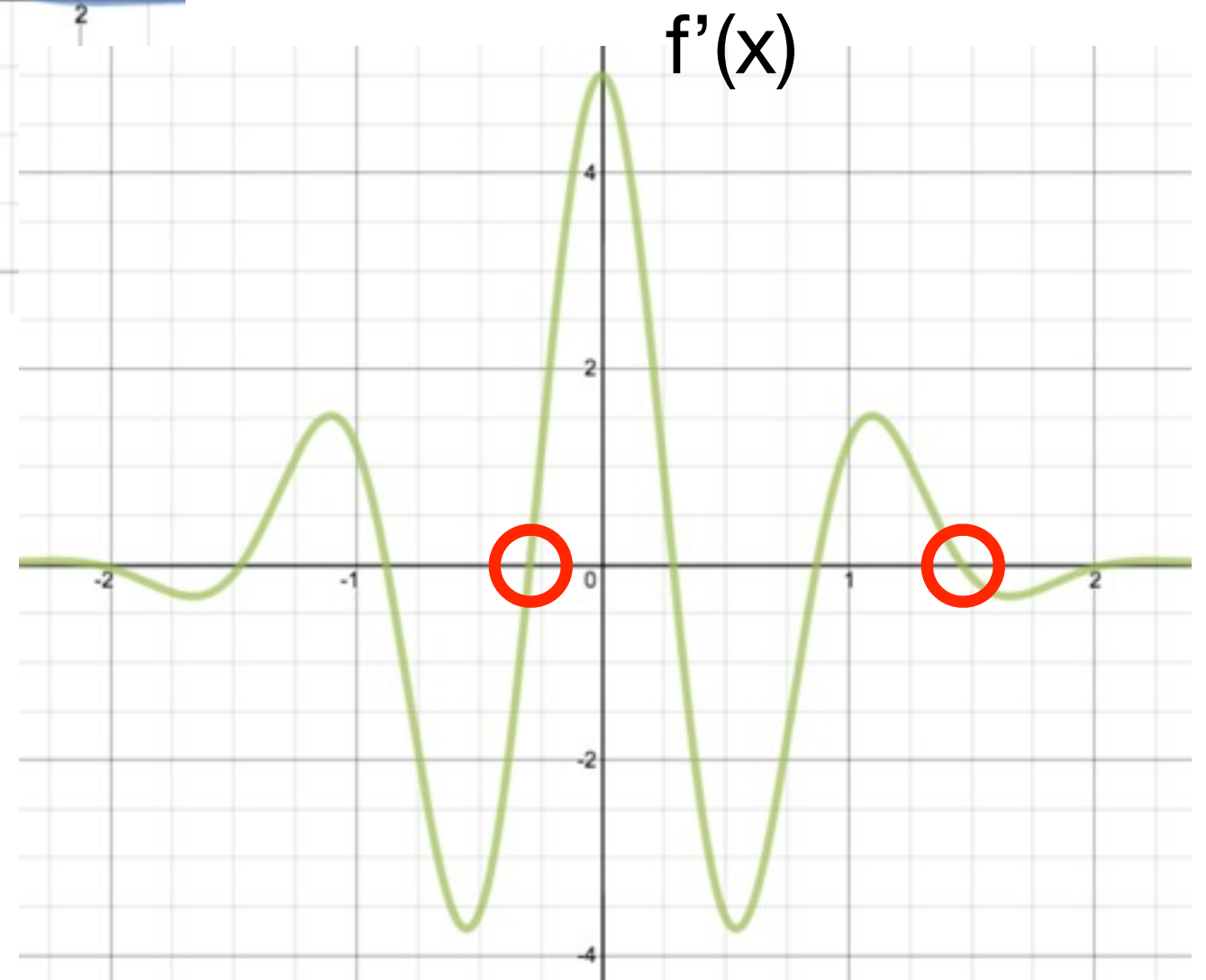
Sketch  $f'(x)$  for the function  $f(x)$  given below.



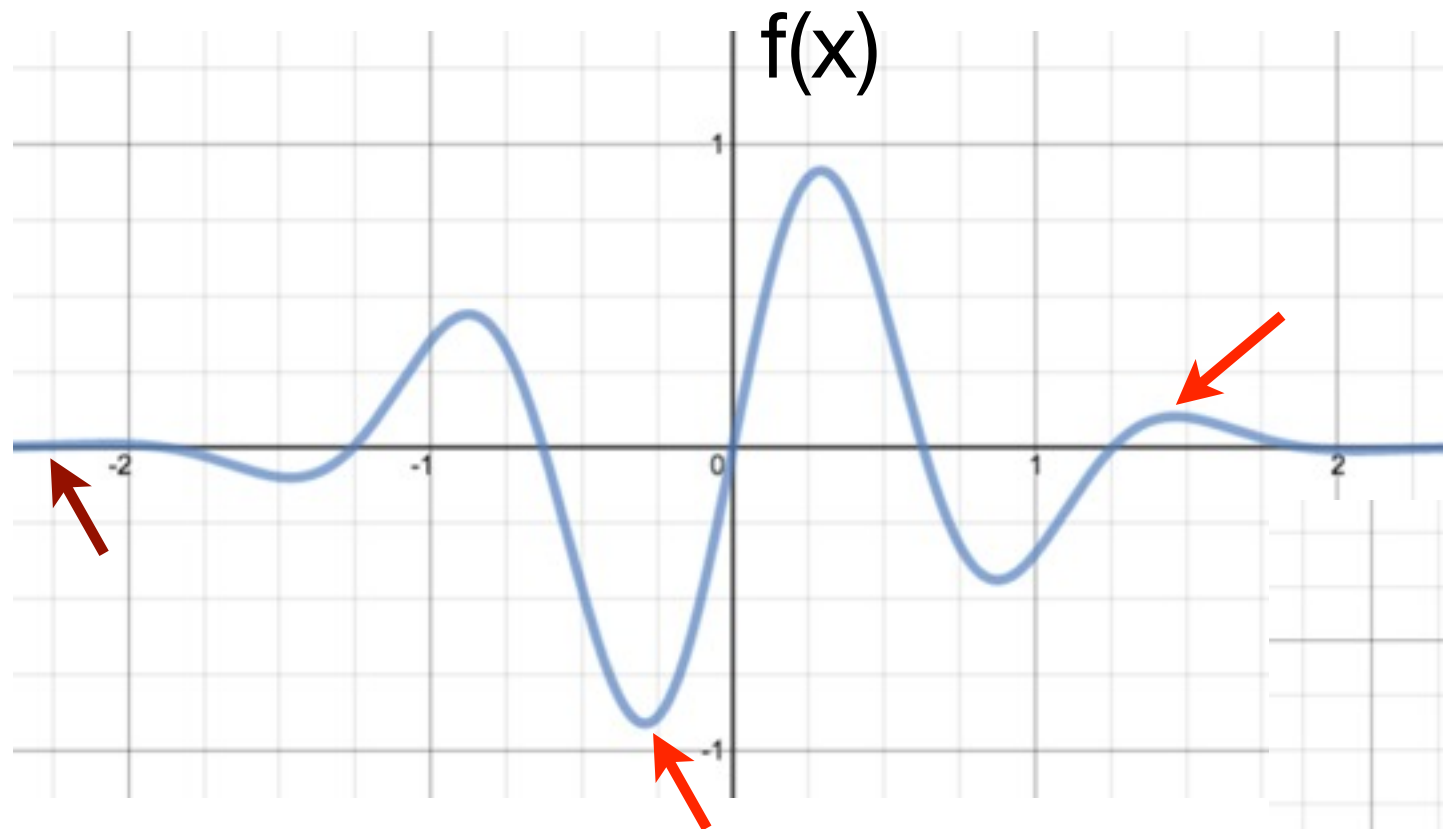
(A) My graph shows this.

(B) Oops.

- High and low points (mins and maxes) have zero slope.



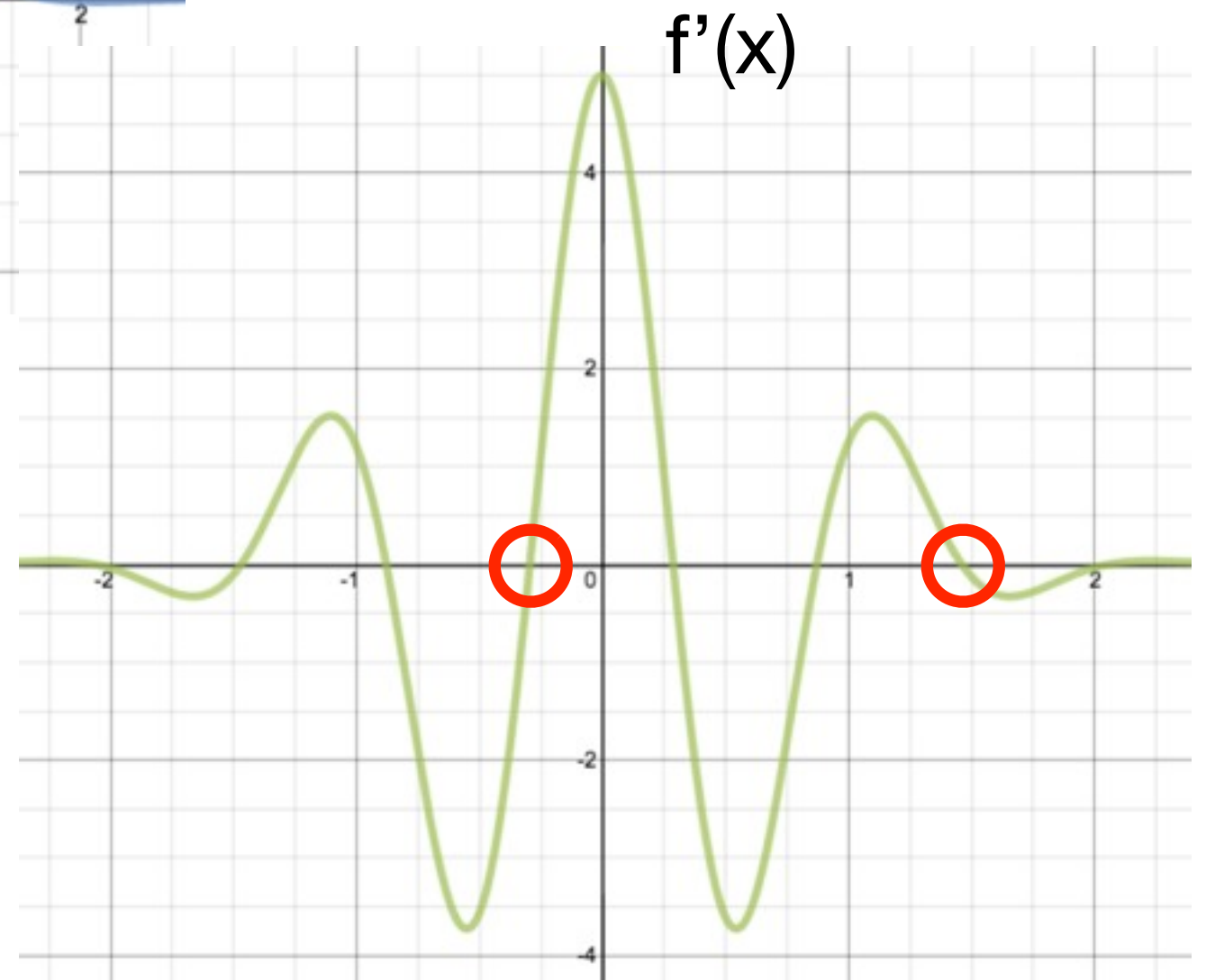
Sketch  $f'(x)$  for the function  $f(x)$  given below.



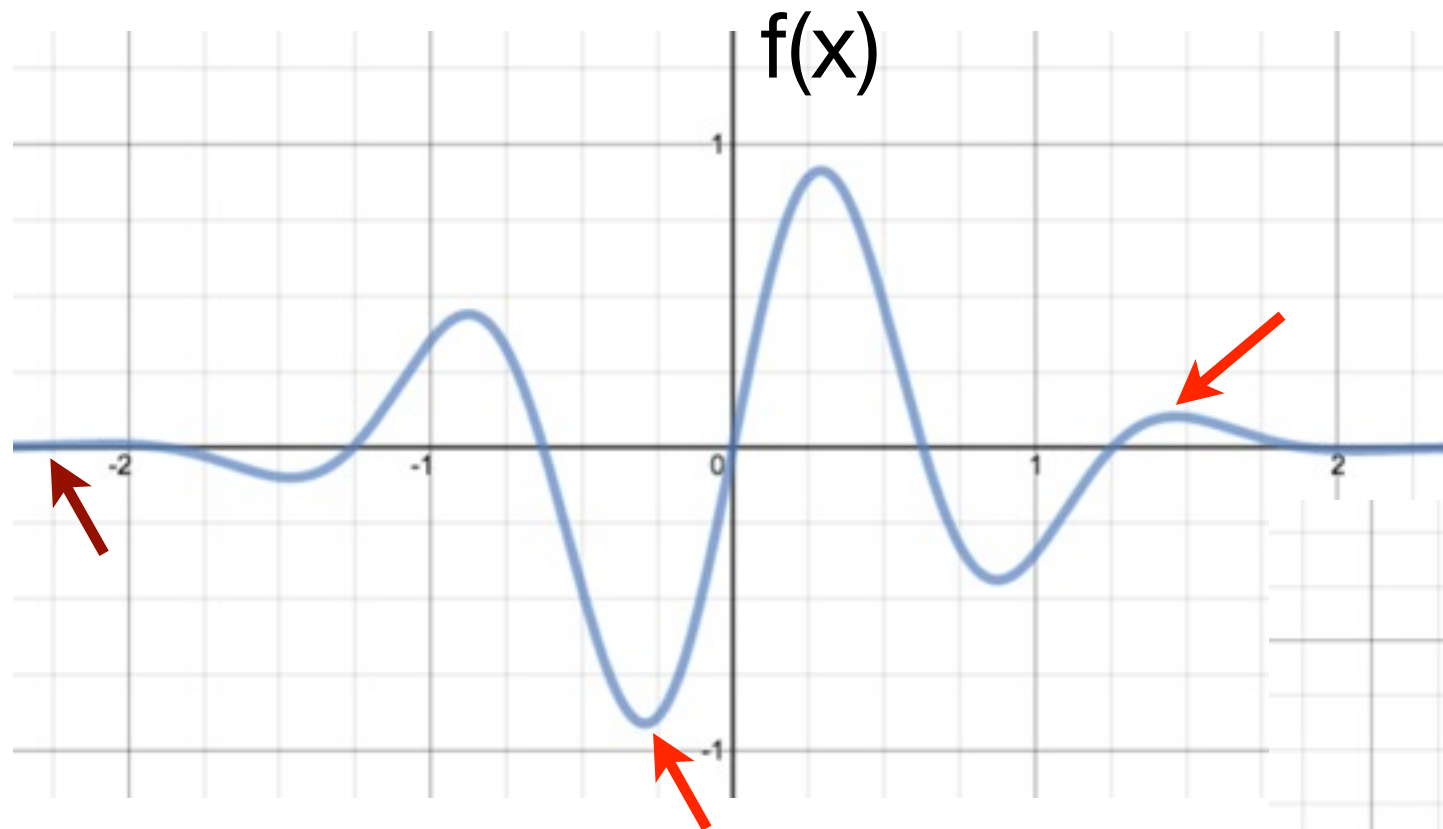
(A) My graph shows this.

(B) Oops.

- High and low points (mins and maxes) have zero slope.
- For large  $|x|$ ,  $f(x)$  becomes flat.



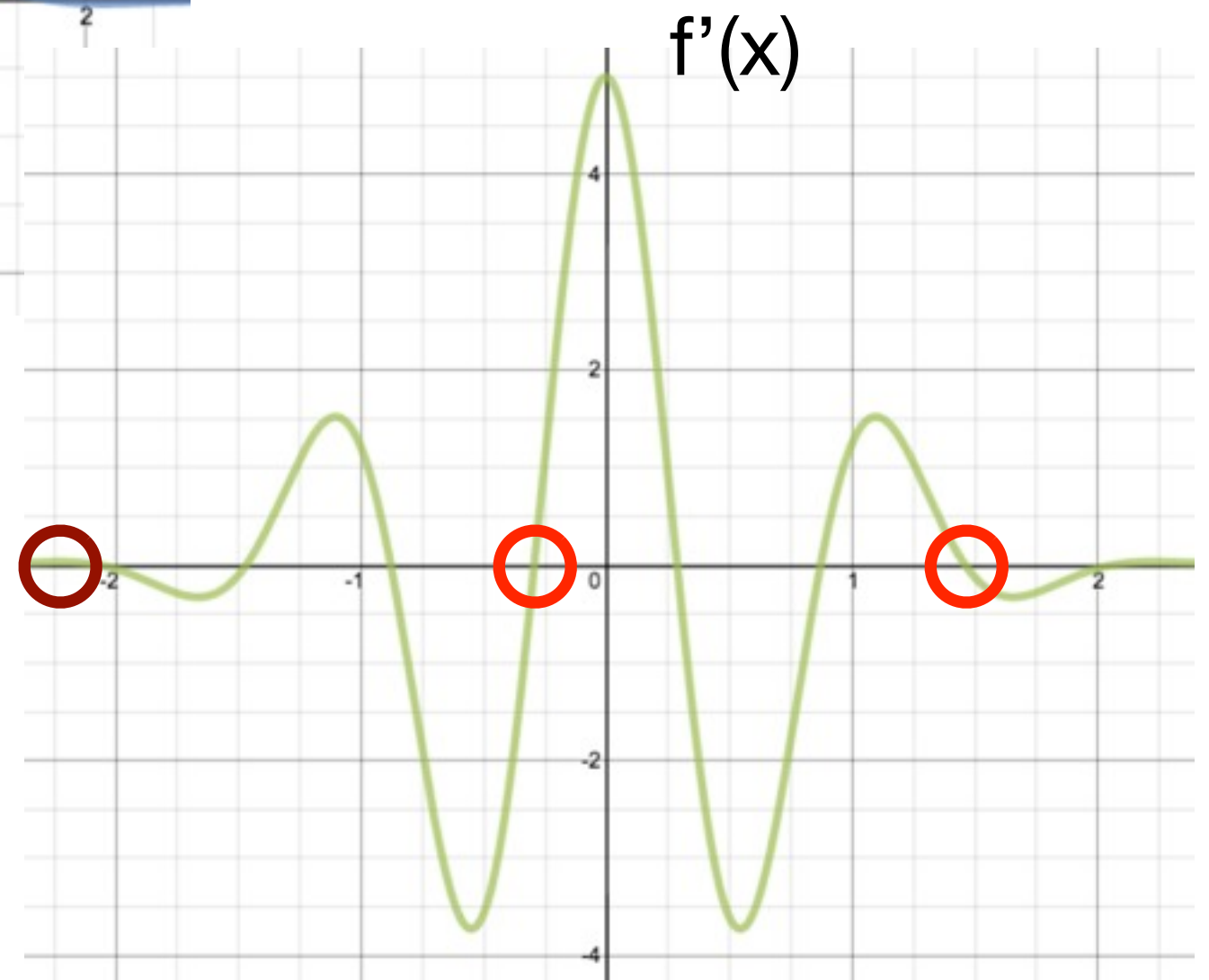
Sketch  $f'(x)$  for the function  $f(x)$  given below.



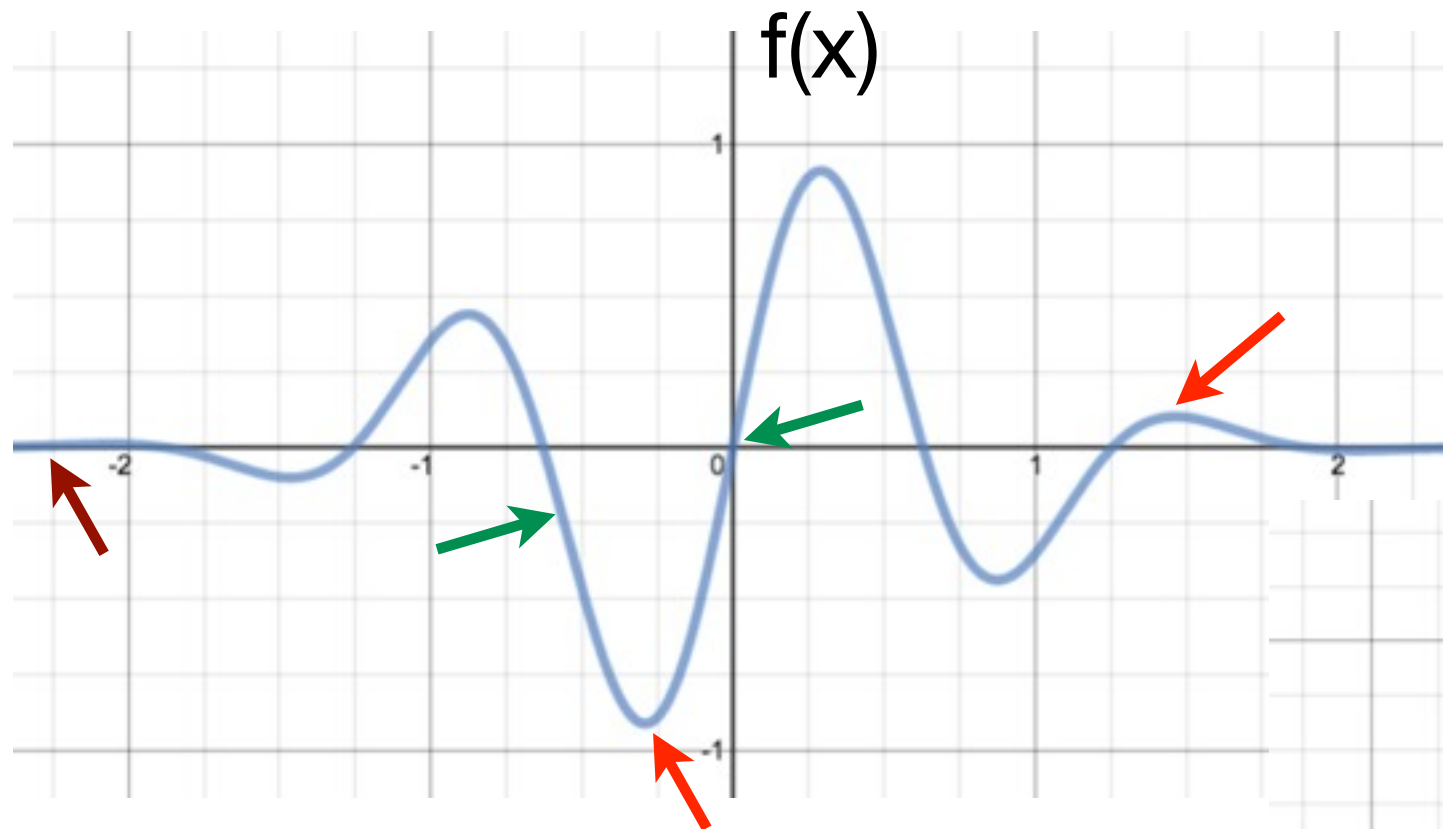
(A) My graph shows this.

(B) Oops.

- High and low points (mins and maxes) have zero slope.
- For large  $|x|$ ,  $f(x)$  becomes flat.



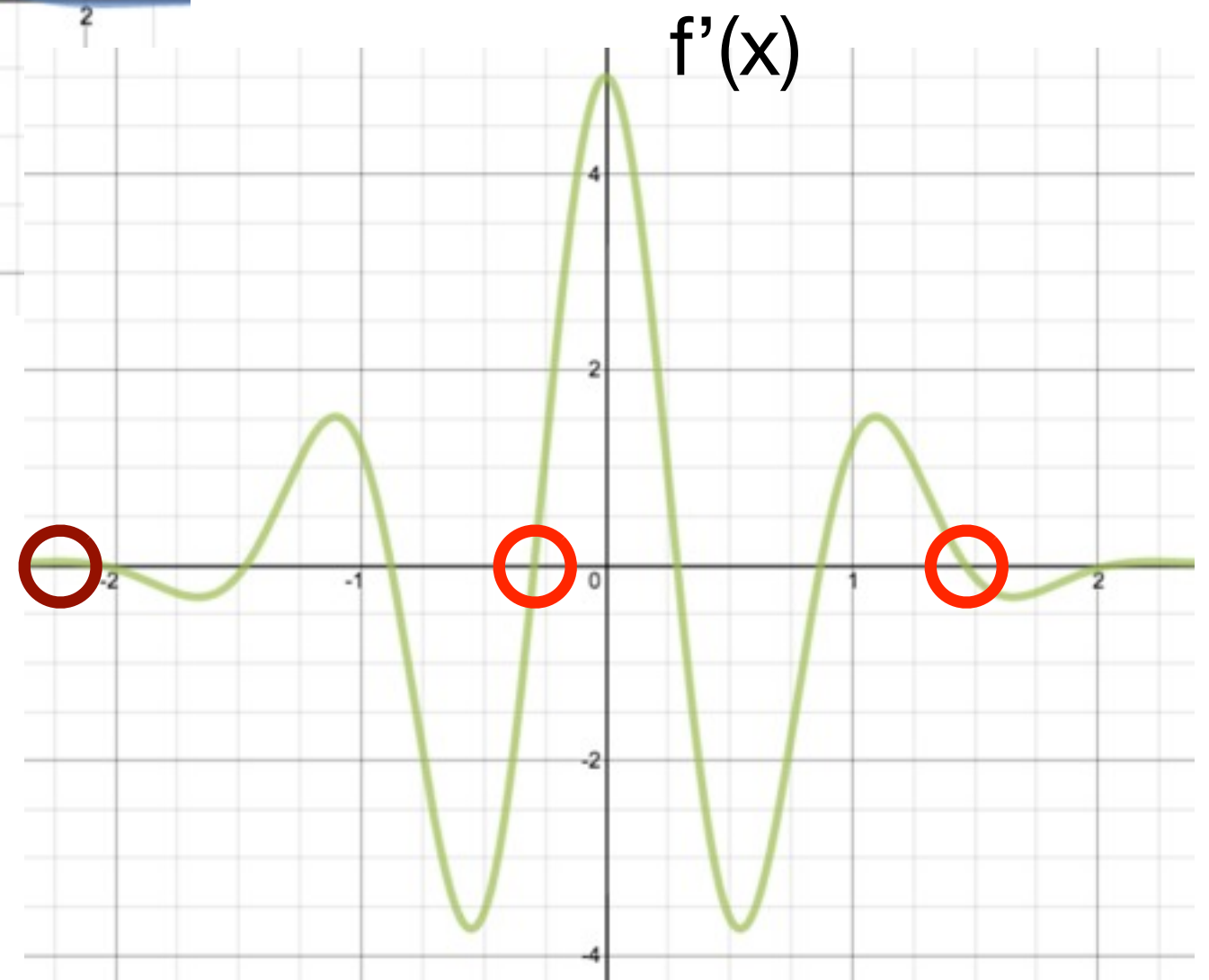
Sketch  $f'(x)$  for the function  $f(x)$  given below.



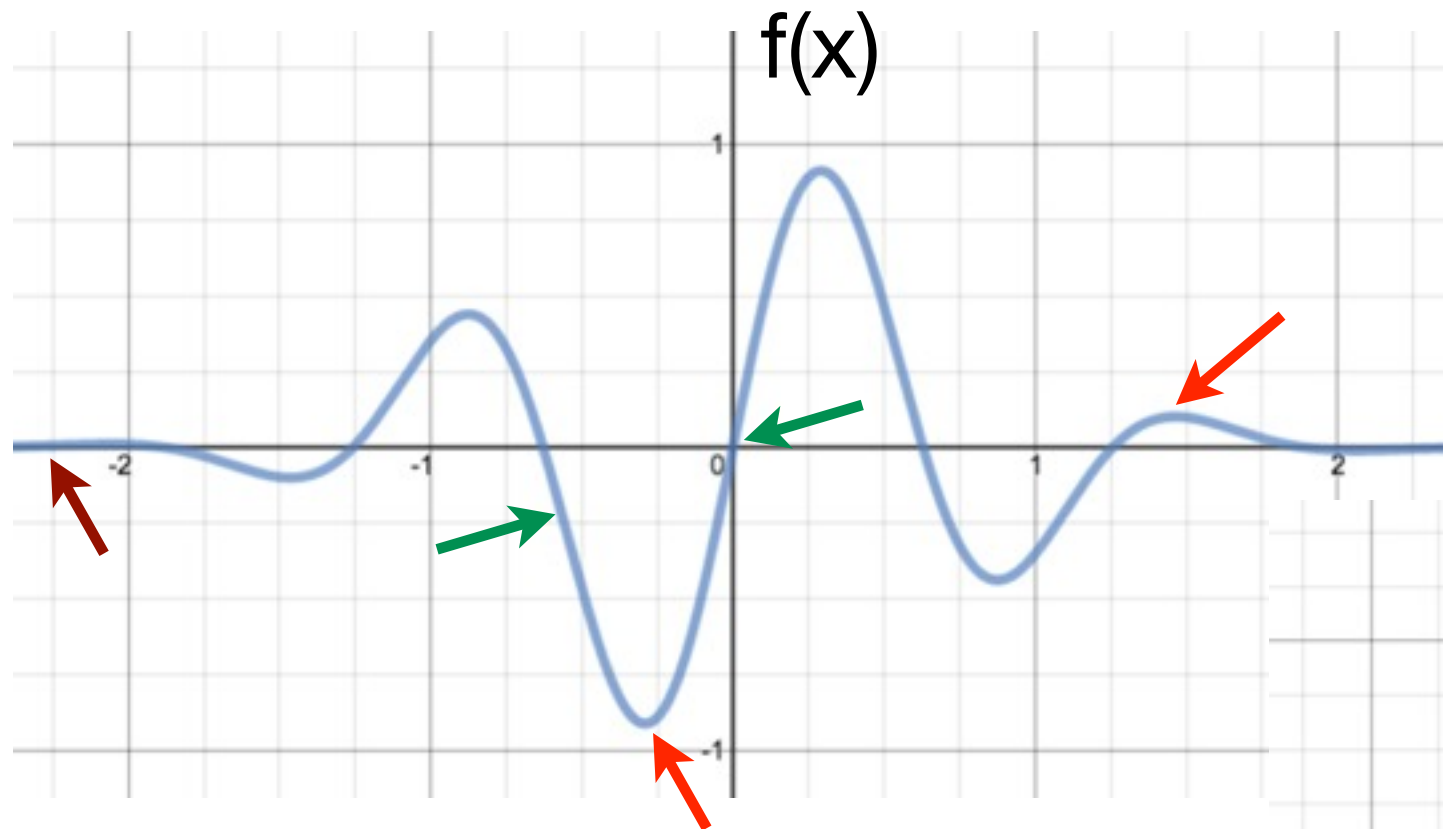
(A) My graph shows this.

(B) Oops.

- High and low points (mins and maxes) have zero slope.
- For large  $|x|$ ,  $f(x)$  becomes flat.
- Estimate maximum and minimum slopes.



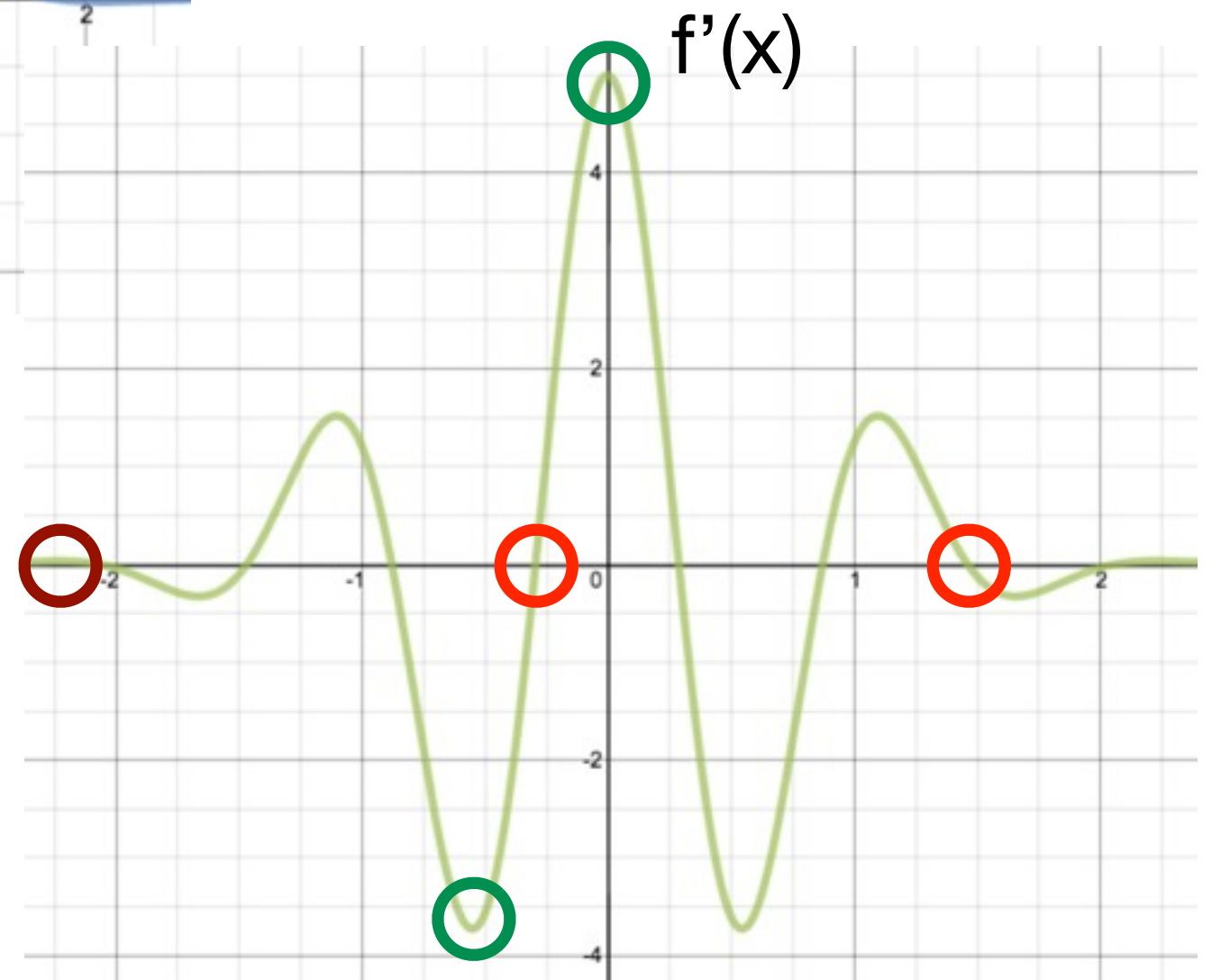
Sketch  $f'(x)$  for the function  $f(x)$  given below.



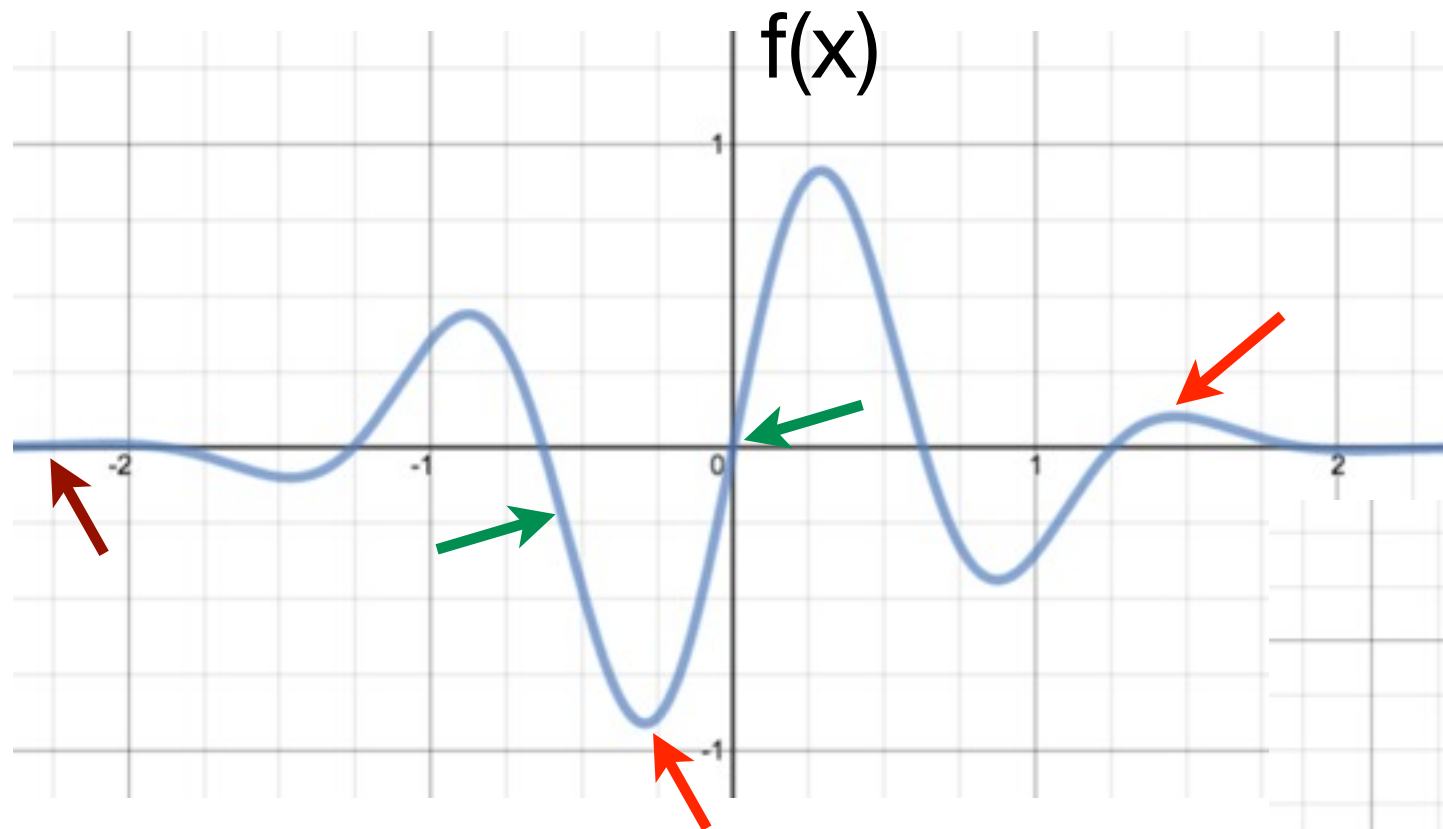
(A) My graph shows this.

(B) Oops.

- High and low points (mins and maxes) have zero slope.
- For large  $|x|$ ,  $f(x)$  becomes flat.
- Estimate maximum and minimum slopes.



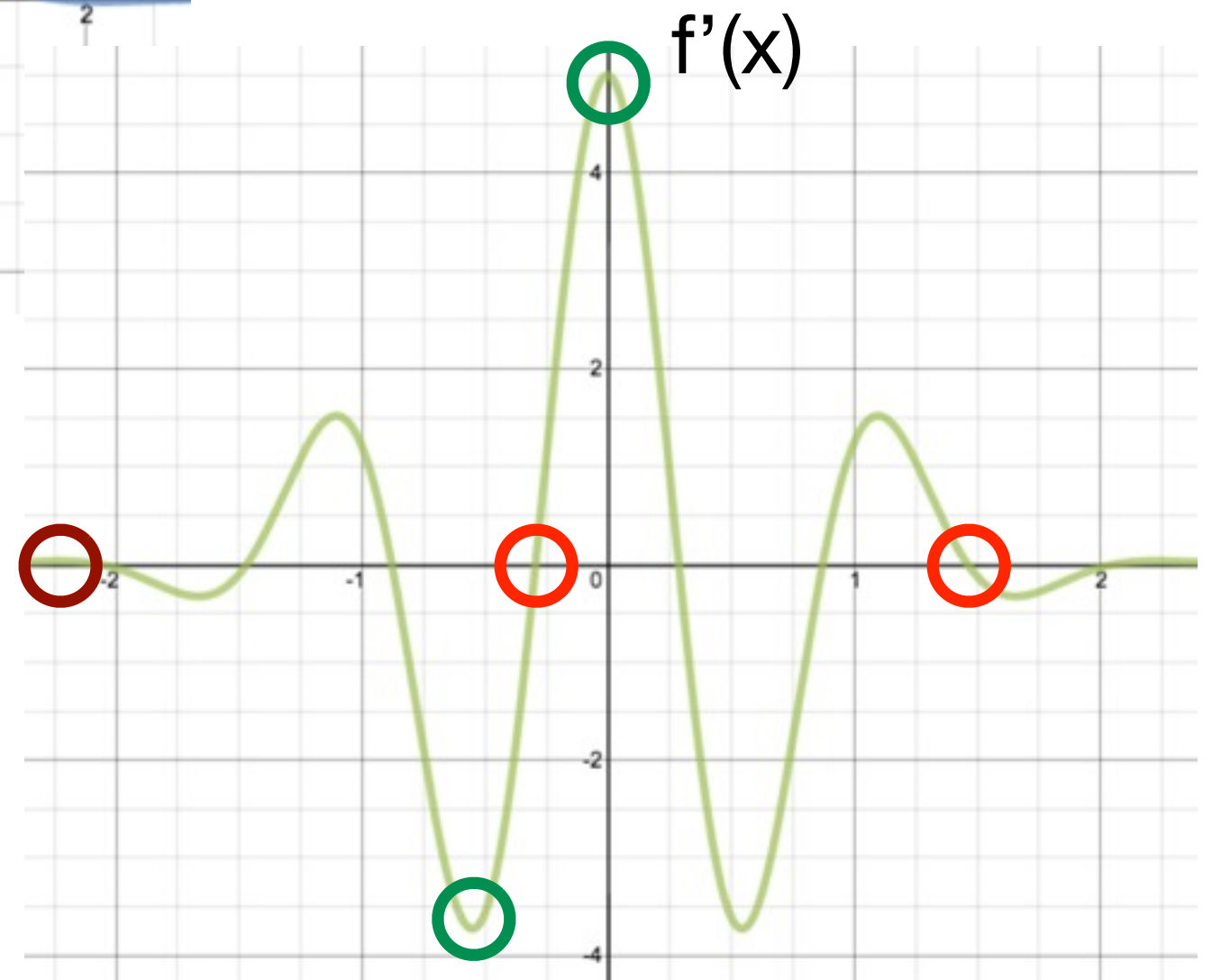
Sketch  $f'(x)$  for the function  $f(x)$  given below.



(A) My graph shows this.

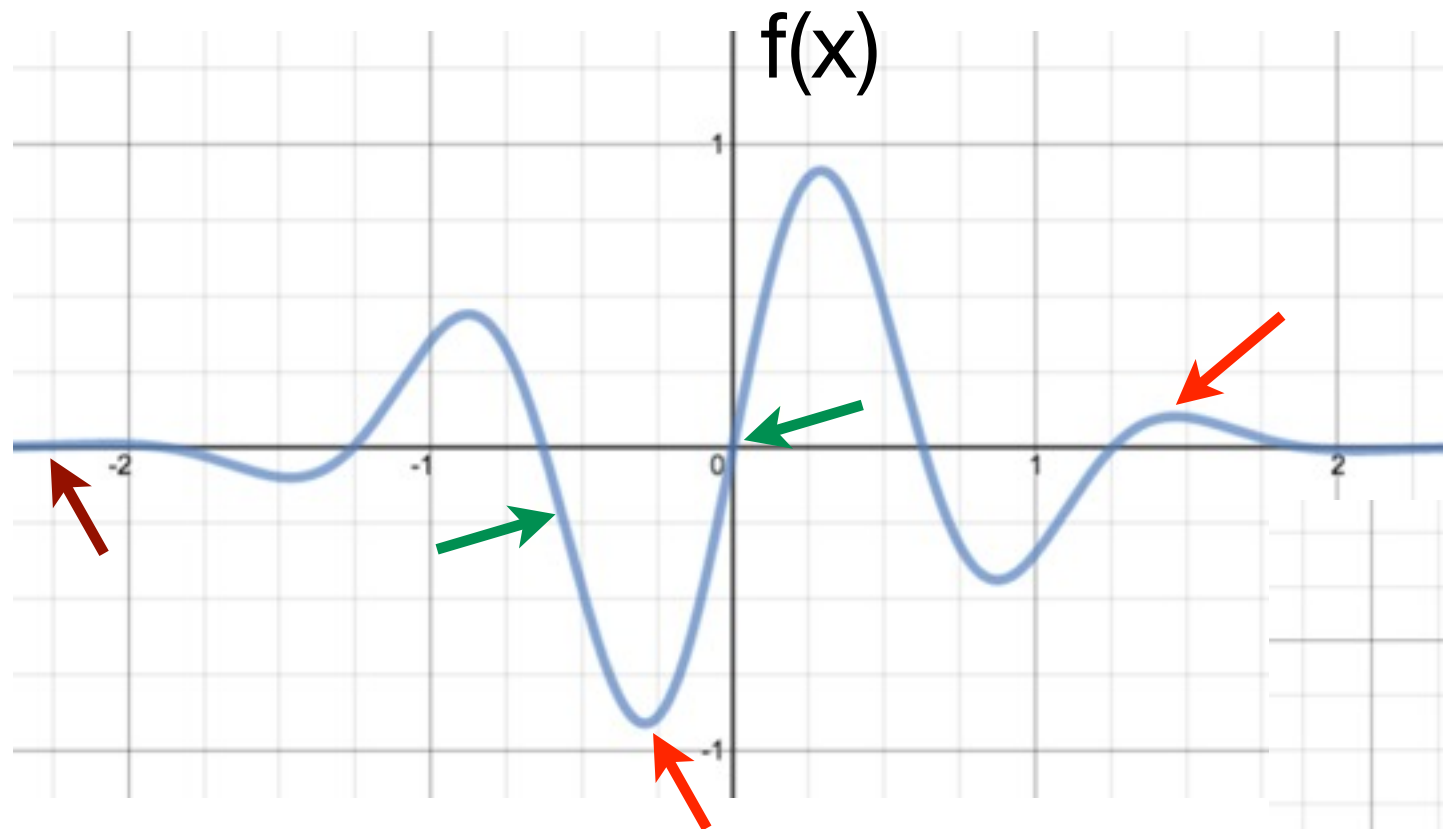
(B) Oops.

- High and low points (mins and maxes) have zero slope.
- For large  $|x|$ ,  $f(x)$  becomes flat.
- Estimate maximum and minimum slopes.
- $f(x)$  is odd,  $f'(x)$  is even.





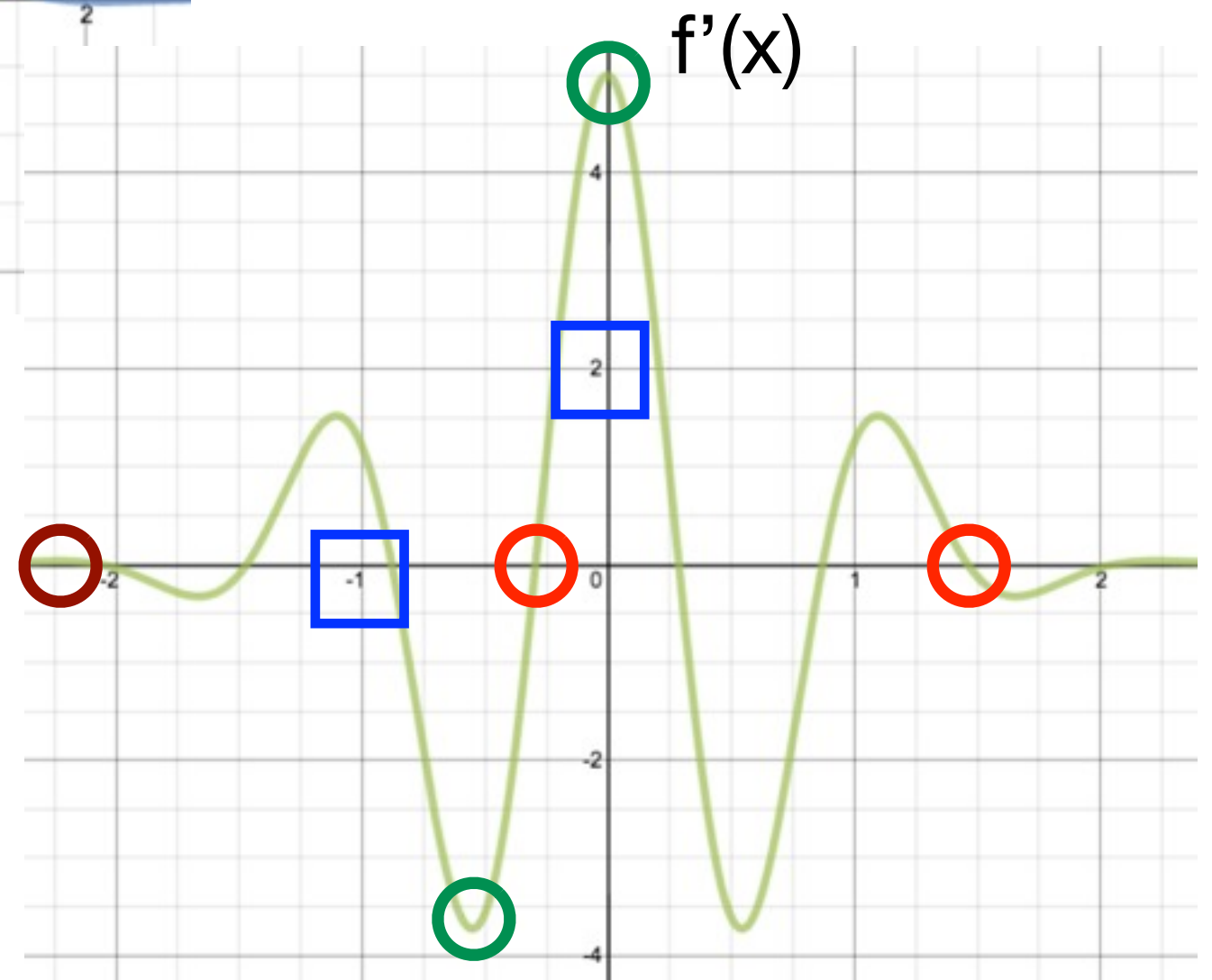
Sketch  $f'(x)$  for the function  $f(x)$  given below.



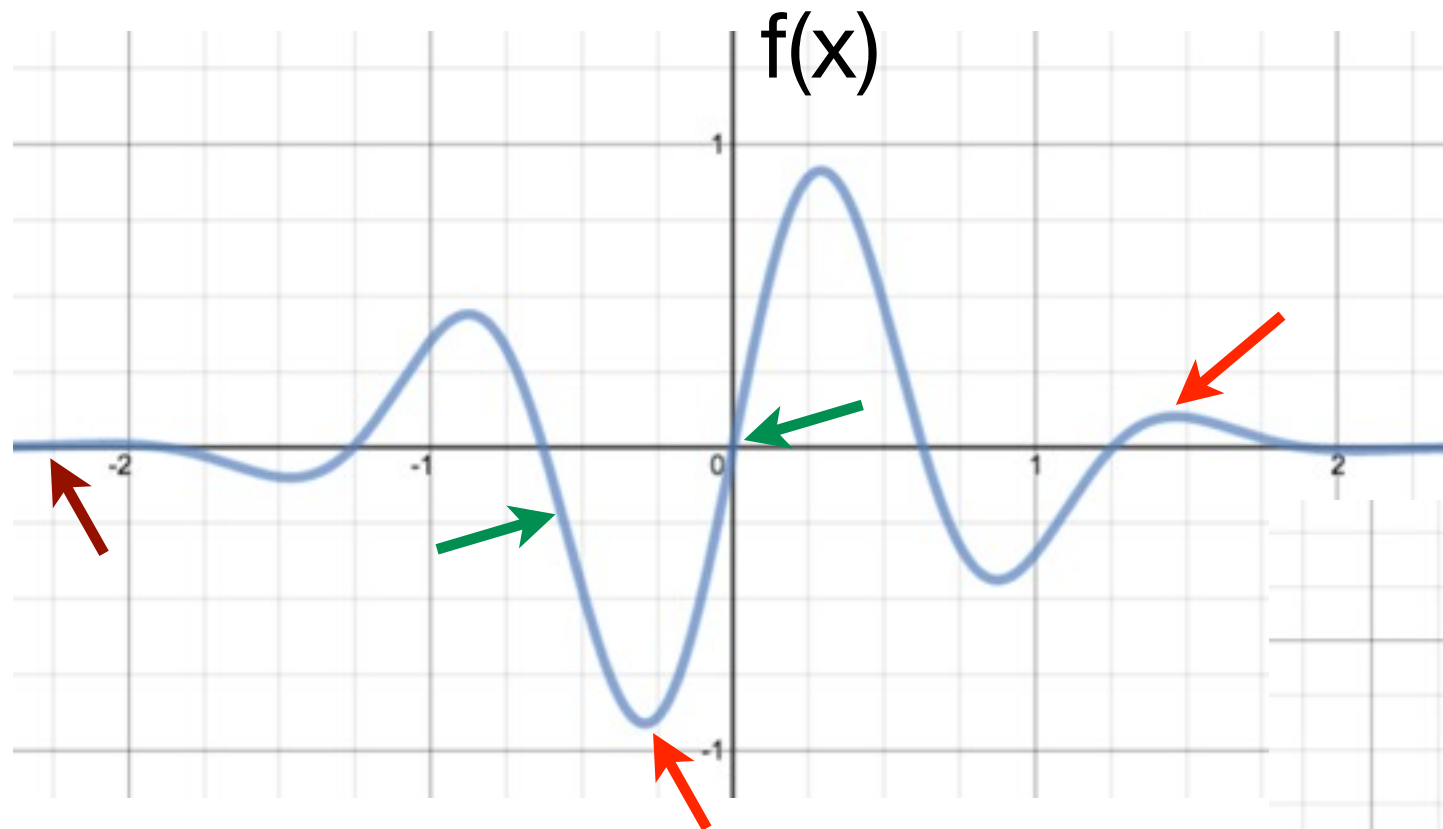
(A) My graph shows this.

(B) Oops.

- High and low points (mins and maxes) have zero slope.
- For large  $|x|$ ,  $f(x)$  becomes flat.
- Estimate maximum and minimum slopes.
- $f(x)$  is odd,  $f'(x)$  is even.

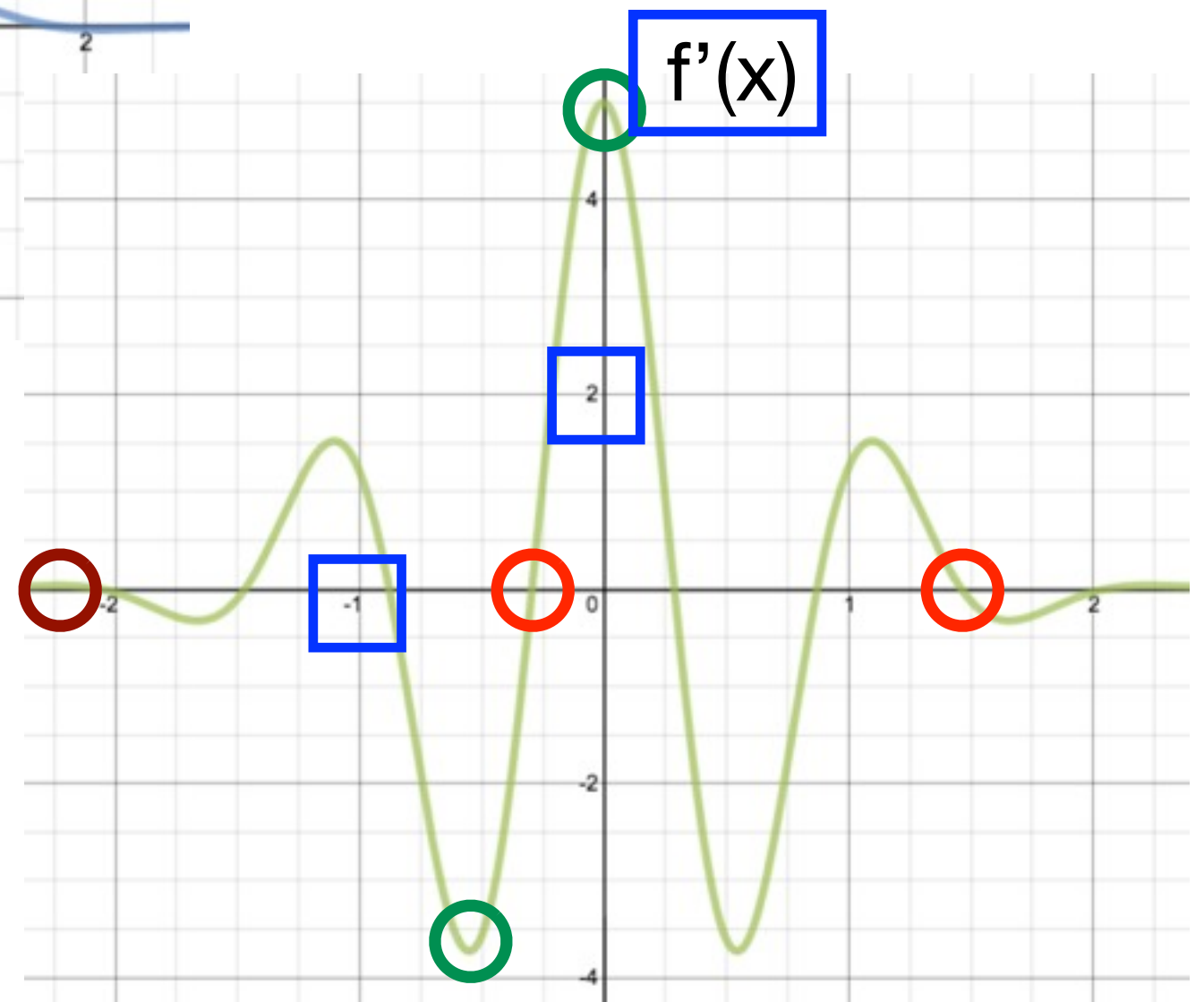


Sketch  $f'(x)$  for the function  $f(x)$  given below.



(A) My graph shows this.

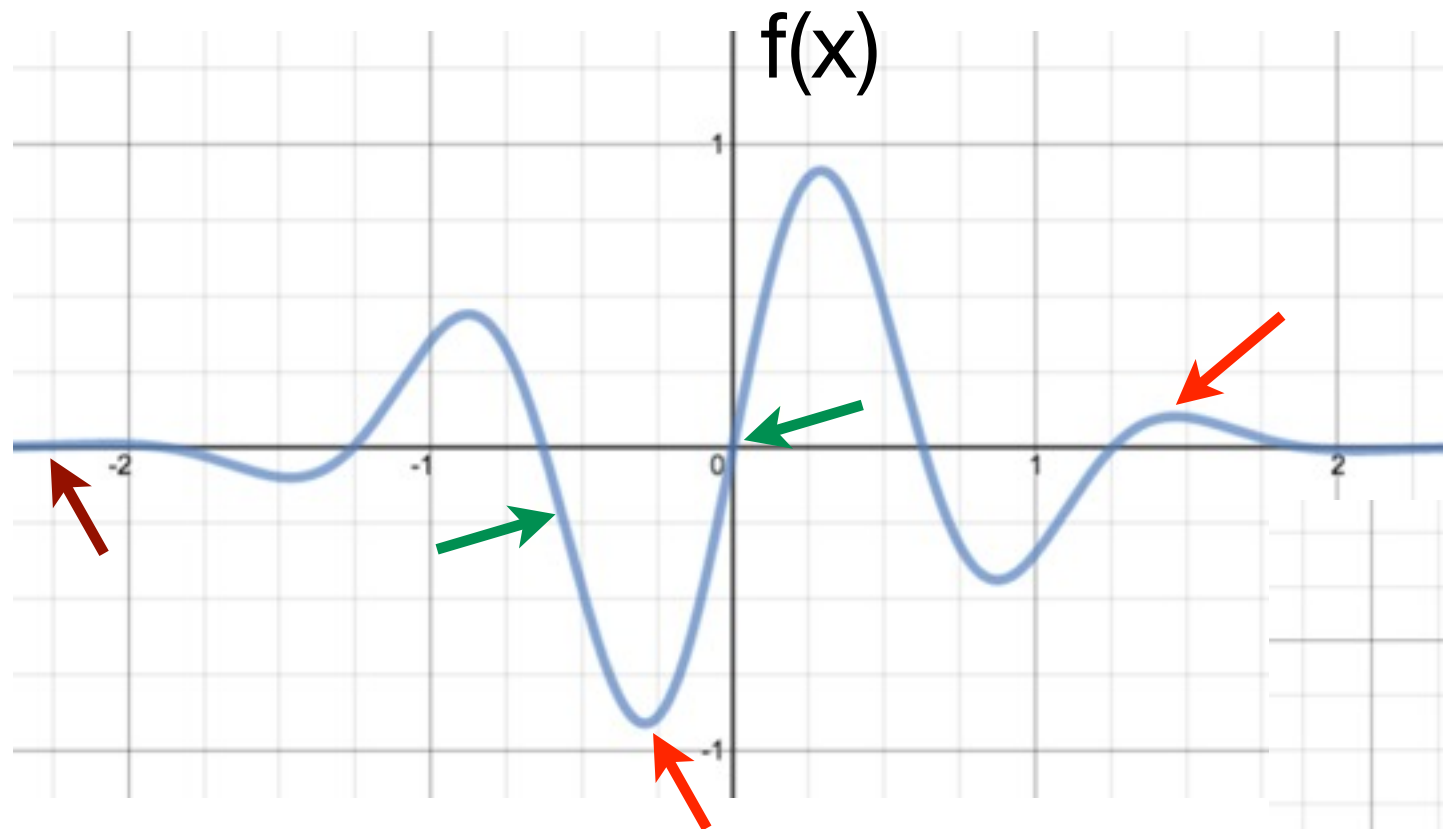
(B) Oops.



- High and low points (mins and maxes) have zero slope.
- For large  $|x|$ ,  $f(x)$  becomes flat.
- Estimate maximum and minimum slopes.
- $f(x)$  is odd,  $f'(x)$  is even.

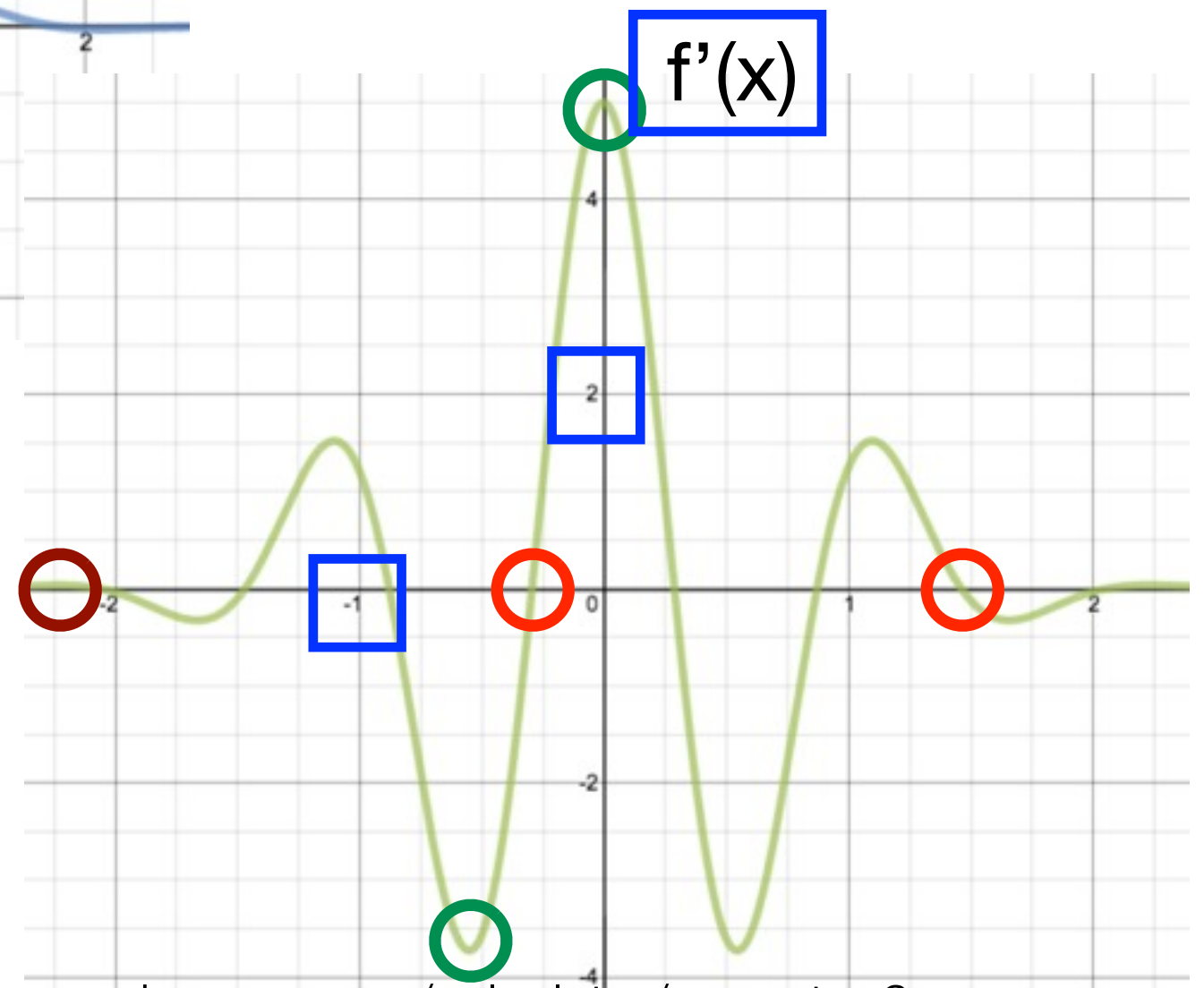


Sketch  $f'(x)$  for the function  $f(x)$  given below.



(A) My graph shows this.

(B) Oops.



- High and low points (mins and maxes) have zero slope.
- For large  $|x|$ ,  $f(x)$  becomes flat.
- Estimate maximum and minimum slopes.
- $f(x)$  is odd,  $f'(x)$  is even.

<https://www.desmos.com/calculator/zowyytoc9u>

# How to graph $f'(x)$ using a spreadsheet

---

- Sketch  $f'(x)$  for the following functions:

- $f(x) = |\sin(x)|$

- $f(x) = e^{-x^2} \sin(5x)$

- Zooming in on a specific region...