

3. [13 points] Let  $f$  be a function such that  $f''(x)$  is defined for all real numbers. A table of some values of  $f'$  is given below.

$x$	2	3	4	6	9	11
$f'(x)$	4	1	0	2	0	-4

Assume that  $f'$  is continuous and either always decreasing or always increasing between consecutive values of  $x$  shown in the table.

- a. [2 points] Using the table above, estimate  $f''(11)$ . *Show your work.*

**Answer:**  $f''(11) \approx$  \_\_\_\_\_

For parts (b) through (e) below, find the indicated values.

Write NONE if there are no such values of  $x$ .

Write NOT ENOUGH INFO if there is not sufficient information to determine a value.

You do not need to explain your reasoning.

- b. [3 points] Find the  $x$ -coordinates of all critical points of  $f(x)$  on the interval  $2 < x < 11$ .

**Answer:** critical point(s) at  $x =$  \_\_\_\_\_

- c. [3 points] Find the  $x$ -coordinates of all local minima of  $f(x)$  on the interval  $2 < x < 11$ .

**Answer:** local min(s) at  $x =$  \_\_\_\_\_

- d. [3 points] Find the  $x$ -coordinates of all inflection points of  $f(x)$  on the interval  $2 < x < 11$ .

**Answer:** inflection point(s) at  $x =$  \_\_\_\_\_

- e. [2 points] Find all values of  $x$  at which  $f(x)$  attains its global maximum on the interval  $2 \leq x \leq 11$ .

**Answer:** global max(es) at  $x =$  \_\_\_\_\_