1. [13 points] Let $g$ be a function such that $g''(x)$ is defined for all real numbers. A table of values of $g'(x)$, the derivative of $g(x)$, is given below.

<table>
<thead>
<tr>
<th>$x$</th>
<th>$-5$</th>
<th>$-1$</th>
<th>$0$</th>
<th>$3$</th>
<th>$4$</th>
<th>$7$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$g'(x)$</td>
<td>$3$</td>
<td>$0$</td>
<td>$-4$</td>
<td>$-3$</td>
<td>$0$</td>
<td>$2$</td>
</tr>
</tbody>
</table>

Assume that between each pair of consecutive values of $x$ given in the table, $g'(x)$ is either always increasing or always decreasing.

For parts a.–f., circle all correct choices.

a. [1 point] At which of the following values does $g(x)$ have a critical point?

$x = -5 \quad x = -1 \quad x = 0 \quad x = 3 \quad x = 4 \quad x = 7 \quad$ NONE OF THESE

b. [2 points] On which of the following intervals is $g(x)$ always decreasing?

$(-5, -1) \quad (-1, 0) \quad (0, 3) \quad (3, 4) \quad (4, 7) \quad$ NONE OF THESE

c. [2 points] At which of the following values does $g(x)$ have a local maximum?

$x = -1 \quad x = 0 \quad x = 3 \quad x = 4 \quad$ NONE OF THESE

d. [2 points] On which of the following intervals is $g(x)$ always concave down?

$(-5, -1) \quad (-1, 0) \quad (0, 3) \quad (3, 4) \quad (4, 7) \quad$ NONE OF THESE

e. [2 points] At which of the following values does $g(x)$ have an inflection point?

$x = -1 \quad x = 0 \quad x = 3 \quad x = 4 \quad$ NONE OF THESE

f. [2 points] Suppose that $g(7) = 0$ and $g''(x) < 0$ for all $x > 7$. Which of the following values of $g(10)$ are possible?

$g(10) = -5 \quad g(10) = 2 \quad g(10) = 6 \quad g(10) = 11 \quad$ NONE OF THESE

g. [2 points] Use the table to give the best possible estimate of $g''(-3)$.

Answer: $g''(-3) \approx \ldots$