1. (2.6 points) The graphs below are for functions $f(x)$, $f'(x)$, and $f''(x)$, but not necessarily in that order. Decide which graph corresponds to which function and label it accordingly.
2. (2.4 points) The following table of values should suggest whether the first and second derivatives are zero, positive, or negative for each of the four functions of \( t \). Fill in the blanks with the appropriate choice.

<table>
<thead>
<tr>
<th></th>
<th>( f(t) )</th>
<th>( g(t) )</th>
<th>( h(t) )</th>
<th>( p(t) )</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>200</td>
<td>7</td>
<td>-100</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>90</td>
<td>10</td>
<td>-50</td>
<td>3</td>
</tr>
<tr>
<td>10</td>
<td>51</td>
<td>13</td>
<td>-30</td>
<td>3</td>
</tr>
<tr>
<td>15</td>
<td>42</td>
<td>16</td>
<td>-20</td>
<td>3</td>
</tr>
</tbody>
</table>

(a) \( f'(t) \) is ________________________________

(b) \( f''(t) \) is ________________________________

(c) \( g'(t) \) is ________________________________

(d) \( g''(t) \) is ________________________________

(e) \( h'(t) \) is ________________________________

(f) \( h''(t) \) is ________________________________

(g) \( p'(t) \) is ________________________________

(h) \( p''(t) \) is ________________________________
3. (3 points) The cost and revenue functions for the Little Genius Kindergarten Chemistry Set Company are graphed below.

(a) At a production level of 80 chemistry sets, which is greater — the marginal revenue or the marginal cost?

(b) If current production is at 50 sets, should the company increase production to 51 sets? Explain.

(c) If current production is at 20 sets, should the company increase production to 21 sets? Explain.
(d) How many chemistry sets are produced and sold when the company attains its maximum profit? What is the dollar amount of this profit?

(e) There are two different values for \( q \) where the marginal revenue is equal to the marginal cost. Use the graph to approximate these values of \( q \). Explain why the company cares about each of these values of \( q \).

4. (2 points) Let \( C(q) \) represent the cost (in dollars) and \( R(q) \) the revenue (in dollars) to a company, where \( q \) is the number of items produced. If \( C(40) = 13000, C'(40) = 301, R(40) = 15360, \) and \( R'(40) = 384 \), approximately how much will the company gain or lose if they increase production from 40 items to 41 items?