1. (2 points each) **True or False.** Circle True only if the statement is always true.

(a) If $f'$ is increasing, then $f$ is increasing.  
\[ T \quad F \]

(b) If $f$ is an exponential function, then $\frac{d}{dx} \ln f(x)$ is constant.  
\[ T \quad F \]

(c) If $f''(x) = 0$ for all $x$, then $f$ is a constant function.  
\[ T \quad F \]

(d) There is a function $f$ so that $f(x) > 0$, $f'(x) < 0$, and $f''(x) < 0$ for all $x$.  
\[ T \quad F \]

(e) If $f''(x) < 0$ for all $x$, then $f(x) \leq f(0) + f'(0)x$  
\[ T \quad F \]

(f) If $f'(x) = 0$, then $f$ has either a relative maximum or relative minimum at $x$.  
\[ T \quad F \]

2. (7 points) The function $g$ has a continuous derivative whose values are given in the following table. There is no more than one critical point of $g$ between any two consecutive $x$-values in the table.

Note that the table gives values of $g'(x)$, **NOT** $g(x)$.

<table>
<thead>
<tr>
<th>$x$</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>$g'(x)$</td>
<td>-9</td>
<td>-2</td>
<td>2</td>
<td>1</td>
<td>-1</td>
<td>-3</td>
<td>-6</td>
<td>-5</td>
<td>-4</td>
<td>2</td>
<td>10</td>
</tr>
</tbody>
</table>

(a) Estimate the $x$-coordinates of the critical points of $g$ for $0 < x < 10$.

(b) For each critical point found in part (a), determine if it corresponds to a local maximum or minimum of the function $g$. Be sure to explain.