5. [15 points] Consider the functions \( f(x) \), \( g(x) \) and \( j(x) \) given by the tables below

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>3</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>( f(x) )</td>
<td>11.1</td>
<td>6.5</td>
<td>4.1</td>
</tr>
<tr>
<td>( g(x) )</td>
<td>2.4</td>
<td>1.7</td>
<td>1</td>
</tr>
<tr>
<td>( j(x) )</td>
<td>0.25</td>
<td>0.5</td>
<td>1</td>
</tr>
</tbody>
</table>

Assume that all the functions above are invertible.

a. [2 points] Which function(s) could be concave up? Circle all possible answers.

\( f(x) \) \( g(x) \) \( j(x) \) None of these

b. [2 points] Which function(s) could be a linear function? Circle all possible answers.

\( f(x) \) \( g(x) \) \( j(x) \) None of these

c. [2 points] Which function(s) could be an exponential function? Circle all possible answers.

\( f(x) \) \( g(x) \) \( j(x) \) None of these

d. [4 points] Compute the value of the following quantities. If there is not enough information to compute the values write "Undefined".

\[ g(f^{-1}(3)) = \]

(\( j(g(3)) \))

Answer=

(\( j(g(3)) \))

e. [3 points] Let \( Q(t) = 3t^2 + 1 \) and \( h \) be a constant. Find a simplified formula for \( \frac{Q(t + h) - Q(t)}{h} \). Your answer may depend on \( t \) and \( h \).

Answer=

f. [2 points] Let \( H(x) = \cos(1 + 2 \log(x)) \) and \( G(x) = \log(x) \). Find a function \( F(x) \) such that \( H(x) = F(G(x)) \).

\( F(x) = \)

\( F(x) = \)