1. Find the equation of the line through the point (2,1), which is perpendicular to the line \( y = -4x + 3 \). Show work.

2. Suppose an exponential function passes through the points (1,10) and (2,5). Find the equation of the function. Show work.
3. Below is a graph of a function $f(x)$. Graph the inverse of $f$ on the same set of axes.

![Graph of a function](image)

4. A doctor administers 120 mg of a certain medication, which leaves the body at a continuous rate of 12% per hour.
   a. Write a formula for the amount $A$ (in mg) of medication in the body $t$ hours after the original dose was administered.
   b. Use logarithms to find the half-life of the medication.
   Show work.
5. Suppose that we are given the following table:

<table>
<thead>
<tr>
<th>X</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>F(x)</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>G(x)</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>5</td>
<td>1</td>
</tr>
</tbody>
</table>

Find F(G(2))

And G(F(2)).

6. Given the following graph:

What is the amplitude?

What is the period?

What is the vertical shift?

Write down an equation for this function: