Quiz 1

1) Simplify the following expression.

\[ (x^3 + x^2 - 2)(x^2 + 2x + 3) \]
\[ = x^5 + 2x^4 + 3x^3 + x^4 + 2x^3 + 3x^2 - 2x^2 - 4x - 6 \]
\[ = x^5 + 3x^4 + 5x^3 + x^2 - 4x - 6 \]

2) Factor the following polynomial.

\[ z^2 - 6zk - 16k^2 \]
\[ = (z - 8k)(z + 2k) \]

3) The population of a city, \( P \), in millions, is a function of \( t \), the number of years since 1970, so \( P = f(t) \). Explain the meaning of the statement \( f(35) = 12 \) in terms of the population of this city.

\[ f(35) = 12 \] tell us that in 35 years from the initial time (1970) that the population of the city is now 12 million.

4) Given the table below, create a graphical representation of the data using an appropriate scale. Be sure to label your axes.

<table>
<thead>
<tr>
<th>( x )</th>
<th>0</th>
<th>2</th>
<th>4</th>
<th>6</th>
<th>8</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>( f(x) )</td>
<td>5</td>
<td>7</td>
<td>10</td>
<td>3</td>
<td>5</td>
<td>0</td>
</tr>
</tbody>
</table>

![Graphical representation of the data](image-url)