Homework 1.2 – Linear Functions

1. Suppose \( f(x) = 2x + 1 \).

(a) Find the y-intercept of \( f \) by evaluating \( f(0) \):

\[ y = f(0) = \ldots \]

(b) Find the x-intercept(s) of \( f \) by solving \( f(x) = 0 \) for \( x \):

\[ x = \ldots \]

2. Consider the set of equations below:

\[ \begin{align*}
  y &= x + 6 \\
  y &= x - 5 \\
  5 &= y \\
  y &= x/2 \\
  y &= -4x - 5 \\
  -3x + 4 &= y
\end{align*} \]

Without using a calculator, match each equation with one of the graphs by entering the letter of the correct graph in the blank.

3. Write \( 7x - 11y + 16 = 0 \) in slope-intercept form.

(a) The slope of the line is \ldots

(b) The y-intercept of the line is \ldots

4. The table below contains data for a linear function:

<table>
<thead>
<tr>
<th>( t )</th>
<th>7.2</th>
<th>7.4</th>
<th>7.6</th>
<th>7.8</th>
</tr>
</thead>
<tbody>
<tr>
<td>( f(t) )</td>
<td>565.8</td>
<td>576.6</td>
<td>587.4</td>
<td>598.2</td>
</tr>
</tbody>
</table>

A formula for the function is \( f(t) = \ldots \).

HINT: First find the point-slope form of the line.

5. The amount of money (in dollars) charged a phone company is

\[ C(n) = 27.75 + 0.13n, \]

where \( n \) is the number of minutes used.

(a) Which of the following statements correctly explains the significance of the y-intercept in the equation above?

- A. If you do not use your phone all month, your monthly phone bill will be \$0.13 .
- B. For every minute you talk on the phone your monthly phone bill increases by \$27.75 .
- C. The phone company charges \$0.13 per minute to use the phone.
- D. The fixed monthly service charge is \$27.75 .
- E. All of the above
- F. None of the above

(b) Which of the following statements correctly explains the significance of the slope in the equation above?

- A. If you do not use your phone all month, your monthly phone bill will be \$0.13 .
- B. The fixed monthly service charge is \$27.75 .
- C. The phone company charges \$0.13 per minute to use the phone.
- D. For every minute you talk on the phone your monthly phone bill increases by \$27.75 .
- E. All of the above
- F. None of the above