10.2 Practice B

1) book: pg638 #5 (clearly show your work)

\[ y = -3x^2 + 24x - 22 \]
\[ A = -3 \quad B = 24 \quad C = -22 \]

**AS:**
\[ x = \frac{-B}{2A} \]
\[ x = \frac{-24}{2(-3)} \]
\[ x = 4 \]

**Vertex (4, 26)**

\[ y = -3(4)^2 + 24(4) - 22 \]
\[ y = 26 \]

2) book: pg638 #7 (clearly show your work)

\[ y = 6x^2 + 6x \]
\[ A = 6 \quad B = 6 \quad C = 0 \]

**AS:**
\[ x = \frac{-B}{2A} \]
\[ x = \frac{-6}{2(6)} \]
\[ x = -\frac{1}{2} \]

**Vertex \((-\frac{1}{2}, \frac{3}{2})\)**

\[ y = 6 \left(-\frac{1}{2}\right)^2 + 6\left(-\frac{1}{2}\right) \]
\[ y = -1.5 \]
\[ y = -\frac{3}{2} \]

3) book: pg638 #9 (clearly show your work)

\[ y = -\frac{2}{3}x^2 - 1 \]
\[ A = -\frac{2}{3} \quad B = 0 \quad C = -1 \]

**AS:**
\[ x = \frac{-B}{2A} \]
\[ x = \frac{0}{2\left(-\frac{2}{3}\right)} \]
\[ x = 0 \]

**Vertex (0, -1)**

\[ y = -\frac{2}{3}(0)^2 - 1 \]
\[ y = -1 \]
#4) Graph the quadratic function in standard form and identify the y-intercept, axis of symmetry, and vertex.

(a) Clearly graph at least 5 points and provide the supporting table of values in the space provided below. Mark the vertex on the table.

(b) Give the ordered pair for the y-intercept: \((0, b)\) \(c = 6\). If possible, mark it on the graph with a "V".

(c) Calculate the axis of symmetry and give the appropriate equation. Mark it "AS" on the graph.

\[ AS \quad x = \frac{-a}{2a} = \frac{-4}{2(1)} = -2 \]

\[ x = -2 \]

(d) Give the ordered pair for the vertex \((-2, 2)\). Mark it "V" on the graph.

4) \( f(x) = x^2 + 4x + 6 \)

\[ a = 1 \quad b = 4 \quad c = 6 \]

\[ y = (-2)^2 + 4(-2) + b \]

\[ y = 2 \]

\[ y_{int} \]

\[ y_{vert} \]

\[ AS \quad x = -2 \]

\[ V \]

<table>
<thead>
<tr>
<th>(x)</th>
<th>(y)</th>
</tr>
</thead>
<tbody>
<tr>
<td>-4</td>
<td>6</td>
</tr>
<tr>
<td>-3</td>
<td>3</td>
</tr>
<tr>
<td>-2</td>
<td>2</td>
</tr>
<tr>
<td>-1</td>
<td>3</td>
</tr>
<tr>
<td>0</td>
<td>6</td>
</tr>
</tbody>
</table>
#5) Graph the quadratic function in standard form and identify the y-intercept, axis of symmetry, and vertex.

(a) Clearly graph at least 5 points and provide the supporting table of values in the space provided below. Mark the vertex on the table.

(b) Give the ordered pair for the y-intercept: \((0, 1)\). If possible, mark it on the graph with a "Y".  
\[ C = 1 \]

(c) Calculate the axis of symmetry and give the appropriate equation. Mark it "AS" on the graph.
\[ \text{A.S. } x = \frac{-b}{2a} = \frac{2}{2(-1)} = -1 \]
\[ X = -1 \]

(d) Give the ordered pair for the vertex \((-1, 2)\). Mark it "V" on the graph.

5) \(f(x) = -x^2 - 2x + 1\) \[ A = -1 \quad B = -2 \quad C = 1 \]
\[ y = -(1)^2 - 2(-1) + 1 \]
\[ y = 2 \]

\[
\begin{array}{c|c}
 x & y \\
-3 & -2 \\
-2 & 1 \\
-1 & 2 \\
0 & 1 \\
1 & -2 \\
\end{array}
\]
Sketch the graph of each function and include a table with 5 points; label the vertex, y-intercept, & A.S.

6) \( f(x) = -2x^2 + 8x - 9 \)

\[
\begin{align*}
A &= -2 \\
B &= 8 \\
C &= -9
\end{align*}
\]

\[ A.S. \ x = \frac{-B}{2A} = \frac{-8}{2(-2)} = 2 \]

\[ \text{Vertex } (2, -1) \]

\[
\begin{array}{c|c|c|c|c|c}
 x & 0 & 1 & 2 & 3 & 4 \\
 y & -9 & -3 & -1 & -3 & -9 \\
\end{array}
\]

7) \( f(x) = 2x^2 - 4x + 5 \)

\[
\begin{align*}
A &= 2 \\
B &= -4 \\
C &= 5
\end{align*}
\]

\[ A.S. \ x = \frac{4}{2(2)} \]

\[ x = 1 \]

\[ \text{Vertex } (1, 3) \]

\[
\begin{array}{c|c|c|c|c|c}
 x & -1 & 0 & 1 & 2 & 3 \\
 y & 11 & 5 & 3 & 5 & 11 \\
\end{array}
\]