Graphing Quadratics

1. By graphing the following examples, we will figure out an easy way to graph many quadratics and other functions.

<table>
<thead>
<tr>
<th></th>
<th>$-x^2$</th>
<th>$x^2 - 2$</th>
<th>$x^2 + 2$</th>
<th>$x^2/2$</th>
<th>$2x^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$(-x)^2$</td>
<td>$(x-2)^2$</td>
<td>$(x+2)^2$</td>
<td>$(x/2)^2$</td>
<td>$(2x)^2$</td>
<td></td>
</tr>
</tbody>
</table>

(a) Graph each function in the list above.

(b) Compare the shape of each graph to the graph of $x^2$.

(c) Contrast each function’s graph with the graph of $x^2$. What changes? Why?

(d) Graph $-3(x-5)^2 - 1$ using these ideas.

2. Using the graph below graph each of the following.

(a) $\sigma(x + 2)$

(b) $\sigma(x) + 2$

(c) $-\sigma(x)$

(d) $\sigma(-x)$

(e) $3\sigma(-2x) + 1$