## Math 163A Handout 2: Tables about Transformations and End Behavior

### Transformations of graphs

<table>
<thead>
<tr>
<th></th>
<th>constant on the outside</th>
<th>constant on the inside</th>
</tr>
</thead>
<tbody>
<tr>
<td>additive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>constant on the outside</td>
<td>( g(x) = f(x) + c )</td>
<td>( g(x) = f(x + c) )</td>
</tr>
<tr>
<td>Make graph of ( g ) by adding ( c ) to the ( y )-values on the graph of ( f ).</td>
<td>Make graph of ( g ) by subtracting ( c ) from the ( x )-values on the graph of ( f ).</td>
<td></td>
</tr>
<tr>
<td>multiplicative</td>
<td></td>
<td></td>
</tr>
<tr>
<td>constant on the inside</td>
<td>( g(x) = cf(x) )</td>
<td></td>
</tr>
<tr>
<td>Make graph of ( g ) by multiplying the ( y )-values on the graph of ( f ) by ( c ).</td>
<td>Make graph of ( g ) by dividing the ( x )-values on the graph of ( f ) by ( c ).</td>
<td></td>
</tr>
</tbody>
</table>

### End behavior of polynomial graphs

<table>
<thead>
<tr>
<th>End behavior of polynomial graphs</th>
<th>even-degree polynomial</th>
<th>odd-degree polynomial</th>
</tr>
</thead>
<tbody>
<tr>
<td>positive leading coefficient</td>
<td>graph goes up on both sides</td>
<td>graph goes up on right, down on left.</td>
</tr>
<tr>
<td>negative leading coefficient</td>
<td>graph goes down on both sides</td>
<td>graph goes down on right, up on left.</td>
</tr>
</tbody>
</table>