12.4 Exercises
Note: All computations are done using the formula given in the textbook, not the TI-84. Values are rounded to 4-decimal places.

Correlation

1.

<table>
<thead>
<tr>
<th>X</th>
<th>Y</th>
<th>Y+5</th>
<th>5Y</th>
<th>-Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>8</td>
<td>15</td>
<td>-3</td>
</tr>
<tr>
<td>5</td>
<td>10</td>
<td>15</td>
<td>50</td>
<td>-10</td>
</tr>
<tr>
<td>-1</td>
<td>1</td>
<td>6</td>
<td>5</td>
<td>-1</td>
</tr>
<tr>
<td>6</td>
<td>15</td>
<td>20</td>
<td>75</td>
<td>-15</td>
</tr>
</tbody>
</table>

a) \( r = 0.9527 \)
b) \( r = 0.9527 \)
c) \( r = 0.9527 \)
d) \( r = 0.9527 \)
e) \( r = -0.9527 \)

3.

Scatterplot of 1st and 2nd Exam Scores

(a)
(b) \( r = 0.4535 \); This correlation coefficient implies a moderate positive relationship and this supports our judgment in (a).

(c) 

1. All points shifted to the right but display the same scatter pattern. 
2. The correlation coefficient will remain the same since the scatter pattern of points didn't change.

(d) \( r = 0.0829 \). The new values (two zero’s) yield outliers in the plot and thus weaken the strength of the relationship. Hence, the correlation coefficient drastically decreases.