This assignment is due by 11 am on March 30, 2007. You can turn it in to me in class or drop it by the office, Blocker 640D. Be sure that you follow the homework rules, they can be found on your syllabus. Please work the problems in the order that they are listed.

1. Roger is running a marathon. His speed is recorded every 15 minutes.

<table>
<thead>
<tr>
<th>time since start(hours)</th>
<th>0</th>
<th>0.25</th>
<th>0.5</th>
<th>0.75</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>speed(mph)</td>
<td>18</td>
<td>16</td>
<td>14</td>
<td>12</td>
<td>8</td>
</tr>
</tbody>
</table>

Assume that Roger’s speed is never increasing.

(a) Compute a right sum that estimates the distance that Roger ran. Is this a lower estimate or an upper estimate or can this not be determined.

(b) Compute a left sum that estimates the distance the Roger ran. Is this a lower estimate or an upper estimate or can this not be determined.

2. Work problem 6 in section 5.1 using 3 rectangles and the right sum method. Is the estimation a lower estimate, upper estimate or can this not be determined.

3. Work number 6 in section 5.2 by counting the number of rectangles to make the estimate.

   (a) Each rectangle has an area of ______

   (b) Give the number of rectangles that you use in the estimation.

   (c) Give your estimation for this problem.

4. Estimate \( \int_{1}^{7} x^2 dx \) using 3 rectangles and a right sum.

5. Evaluate the following with a calculator.

   (a) \( \int_{1}^{7} x^2 dx = \)

   (b) \( \int_{1.1}^{1.8} e^x \cdot \ln(x) dx = \)

6. Work problem 16 from section 5.3