A team of British racers is trying to set a land speed record in the Utah desert. On one of their trial runs, they record the following data, where $t$ is the number of seconds after the beginning of the run, and $d$ is the number of feet that the front of their car has gone forward past its initial starting point.

<table>
<thead>
<tr>
<th>$t$</th>
<th>4.00</th>
<th>4.01</th>
<th>4.10</th>
<th>4.50</th>
<th>5.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>$d$</td>
<td>1950.1</td>
<td>1954.12</td>
<td>2003.2</td>
<td>2276.7</td>
<td>3027.2</td>
</tr>
</tbody>
</table>

1. What was the average velocity of the car between $t = 4.00$ seconds and $t = 5.00$ seconds?

2. The average velocity between $t = 4.00$ seconds and $t = 4.50$ seconds?

3. Between $t = 4.00$ seconds and $t = 4.10$ seconds?

4. Between $t = 4.00$ and $t = 4.01$ seconds?

5. What do you think the car’s speedometer read at $t = 4.00$ seconds?

6. Between $t = 4$ and $t = 5$, was the car accelerating? Deaccelerating (braking)? Maintaining a constant speed?

After the trial run, the racers graphed their car’s position against time; see the graph.

7. Draw a line whose slope is the average velocity of the car between $t = 4.00$ and $t = 5.00$ seconds. Why is the slope of this line equal to the average velocity of the car during this time?

8. Same, but between 4.00 and 4.50 seconds; 4.00 and 4.10 seconds; 4.00 and 4.01 seconds.

9. Draw a line representing the car’s velocity at $t = 4.00$, and explain how you can obtain the car’s velocity at $t = 4.00$ from the line you drew.

10. Between $t = 4$ and $t = 5$, was the car accelerating? Deaccelerating (braking)? Maintaining a constant speed? How can you see this from the graph?