8. (3 points each) Sarah decided to run a marathon. However, she started off way too fast and so her speed decreased throughout the race. Below is a table showing how many miles she had run at time \( t \) minutes since the beginning of the race.

<table>
<thead>
<tr>
<th>time (min)</th>
<th>30</th>
<th>60</th>
<th>90</th>
<th>120</th>
<th>150</th>
<th>180</th>
<th>210</th>
<th>240</th>
</tr>
</thead>
<tbody>
<tr>
<td>distance (miles)</td>
<td>5</td>
<td>9</td>
<td>12.5</td>
<td>15.5</td>
<td>18.5</td>
<td>21</td>
<td>23.25</td>
<td>25.2</td>
</tr>
</tbody>
</table>

Let \( s \) be the function such that \( s(t) \) is Sarah’s distance from the starting line \( t \) minutes after the race began.

(a) What is the practical interpretation of \( s'(120) \) in the context of this problem?

(b) Estimate \( s'(120) \).

(c) What is the practical interpretation of \( s^{-1}(14) \) in the context of this problem?

(d) Estimate \( s^{-1}(14) \).

(e) What does the derivative of \( s^{-1}(P) \) at \( P = 14 \) represent in the context of this problem?

(f) Estimate the derivative of \( s^{-1}(P) \) at \( P = 14 \).