1. (4 points) A radar gun was used to record the speed (in meters per second) of a runner during the first six seconds of a race; the data is recorded in the table below. Estimate the distance the runner traveled during the six seconds using the Midpoint Rule with three subintervals \((n = 3)\). (Note: You need not simplify.)

<table>
<thead>
<tr>
<th>Time (sec)</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Velocity (meters/sec)</td>
<td>0</td>
<td>7.3</td>
<td>9.7</td>
<td>10.5</td>
<td>10.7</td>
<td>10.8</td>
<td>10.8</td>
</tr>
</tbody>
</table>
2. (4 points) Evaluate the indefinite integral

\[ \int e^{-2x} \sin(4x) \, dx. \]

You may leave the result in exponential form.
3. (6 points) Evaluate the following definite integral with an appropriate trigonometric substitution.

\[ \int_0^3 \frac{1}{(x^2 + 9)^2} \, dx \]
4. (4 points) Determine the area of the region $S = \{(x, y) \mid -2 < x \leq 0, \ 0 \leq y \leq 1/\sqrt{x+2}\}$, if it is finite.
5. (4 points) Evaluate the indefinite integral

\[ \int \frac{x^2}{x^2 - 3x} \, dx. \]