Section number:

Name of recitation instructor:

Names of team members:

Exercise 1. If $g(x)$ is an increasing function, is the approximation of the integral $\int_0^{10} g(x)\ \mathrm{d}x$ by $\sum_0^{99} g(0 + j \cdot 0.1) \cdot 0.1$ an underestimate or an overestimate? Why? What if $g(x)$ were instead a decreasing function?

Exercise 2. In order for the rectangles to be such that the top right corner sits on the graph,

- The line starting `rectangle('Position', ...` should be changed to

  ```
  rectangle('Position', [                          ], 'EdgeColor', 'r')
  ```

- The line starting `approximated_integral = ...` should be changed to

  ```
  approximated_integral = sum(                                      .* width)
  ```

Exercise 3. Following Exercise 2, what should be the correct formula for approximating the integral $\int_a^b f(x)\ \mathrm{d}x$ using rectangles whose upper right corner sits on the graph of $f(x)$?

Exercise 4. If $A(N)$ is the approximate integral using N rectangles with top left corners on the graph of $f(x)$, and $B(N)$ the approximate integral with top right corners on the graph of $f(x)$, justify the formula

$$B(N) - A(N) = (f(b) - f(a))\frac{b-a}{N}.$$