Math 136: Calculus 2
Spring 2017
Professor Levandosky
Written Homework 1

Instructions: Your solutions to the following problems should be written using the following guidelines.

- Use lined paper, and remove any frayed edges. Write your name and assignment number at the top of the first page.
- Copy each problem and write your solution below it. Keep the problems in the correct order.
- Show all your work. A correct answer with insufficient explanation will not receive full credit. On the other hand, incorrect answers may receive partial credit where appropriate.
- Use words and sentences! Imagine that you are trying to explain to someone how to do the problem. Justify each step in your solution.

1. Calculate L_4, M_4 and R_4 for $f(x) = \sqrt{3x+1}$ over the interval $[2, 4]$.
2. Calculate $\lim_{N\to\infty} R_N$ for $f(x) = 3x - x^2$ on $[0, 3]$.
3. For each definite integral below, sketch the graph of the function and interpret the integral in terms of areas shown in the graph. Then use this interpretation to evaluate the integral.
   (a) $\int_0^3 x + 2\,dx$
   (b) $\int_0^3 x - 2\,dx$
   (c) $\int_0^3 |x - 2|\,dx$
   (d) $\int_{-2}^0 3 + \sqrt{4 - x^2}\,dx$
   (e) $\int_{-2}^2 x^3\,dx$
4. Suppose $\int_1^4 f(x)\,dx = 5$ and $\int_1^4 g(x)\,dx = 10$. Compute $\int_1^4 3f(x) + 2g(x) + 7\,dx$
5. Suppose $\int_0^1 f(x)\,dx = 3$, $\int_1^4 f(x)\,dx = 6$, and $\int_2^4 f(x)\,dx = 5$.
   (a) Compute $\int_0^4 f(x)\,dx$
   (b) Compute $\int_0^2 f(x)\,dx$
   (c) Compute $\int_1^2 f(x)\,dx$