

## Written Homework 2

Math 126

Solve each of the following problems. Write your solutions clearly and neatly on separate paper, explaining your reasoning with complete sentences. Submit your work either in class or in the homework mailbox (RMS level 3, near the fireplace) by 4:00pm on **Friday, September 13**.

- Draw a graph of the function  $f(x) = 2 + x$ . On your graph, shade the region whose area is  $\int_0^3 (2 + x) dx$ .
  - Use a left Riemann sum with  $n = 3$  rectangles to estimate  $\int_0^3 (2 + x) dx$ .
  - Use a midpoint Riemann sum with  $n = 3$  rectangles to estimate  $\int_0^3 (2 + x) dx$ .
  - Use geometry to find the exact answer for  $\int_0^3 (2 + x) dx$ .
  - Use the Fundamental Theorem of Calculus to evaluate  $\int_0^3 (2 + x) dx$ . Confirm that your answer matches what you found in part (d).
- A truck driver applies the brakes, and the truck stops six seconds later. While the brakes are on, the following velocities are recorded:

Time since brakes applied (sec)	0	2	4	6
Velocity (ft/sec)	90	58	32	0

- Give lower and upper estimates for the distance the truck traveled after the brakes were applied. Explain your reasoning.
- Make a sketch the truck's velocity against time. Show your upper and lower estimates on your sketch.
- What definite integral have you approximated in this problem?