Chapter 1

Riemann Sums

Exercise 1

Working Space

t (hours)	4	7	12	15
R(t) (L/hr)	6.5	6.2	5.9	5.6

A tank contains 50 liters of water after 4 hours of filling. Water is being added to the tank at rate $R(t)$. The value of $R(t)$ at select times is shown in the table. Using a right Riemann sum, estimate the amount of water in the tank after 15 hours of filling.

Answer on Page 3

Appendix A

Answers to Exercises

Answer to Exercise 1 (on page 1)

The volume of water will be the amount of water at 4 hours (50 liters) plus the area under the graph of $R(t)$ from $t = 4$ to $t = 15$. We will estimate this area with a right Riemann sum. The approximate volume added from $t = 4$ to $t = 7$ is $(7 - 4) * (6.2) = 18.6$ liters. The approximate volume added from $t = 7$ to $t = 12$ is $(12 - 7) * (5.9) = 29.5$ liters. The approximate volume added from $t = 12$ to $t = 15$ is $(15-12)*(5.6) = 16.8$ liters. Therefore, the approximate total volume of water in the tank at $t = 15$ is $50+18.6+29.5+16.8 = 114.9$ liters.