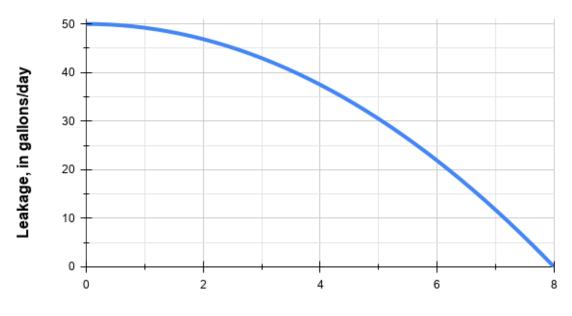
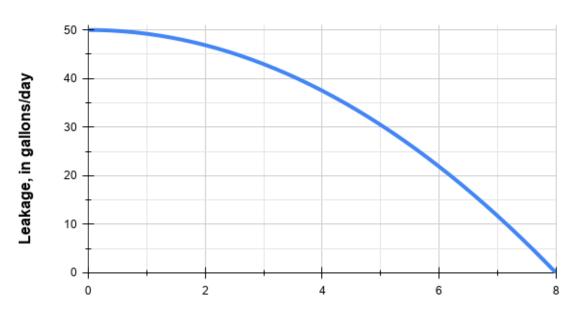
Chapter 5.1: Measuring Distance and Soy Milk Calculus II

College of the Atlantic Spring 2021

- 1. A very fast cat is running at a speed, meters per second, given by the function v(t) = 20 2t. We are interested in how far the cat travels from t = 0 to t = 6 seconds.
 - (a) Estimate the distance traveled using a left-hand sum with $\Delta t = 2$.
 - (b) Estimate the distance traveled using a right-hand sum with $\Delta t = 2$.
 - (c) Estimate the distance traveled using a left-hand sum with $\Delta t = 1$.
 - (d) Estimate the distance traveled using a right-hand sum with $\Delta t = 1$.
 - (e) Suppose you needed an estimate for the cat distance that was accurate to 0.5 meters. What Δt should you choose?
- 2. Soy milk is leaking from a storage tank in COA's dining hall. The rate of leakage is shown on the graph.
 - (a) Come up with upper and lower estimates for the total amount of soy milk that has been released into the environment. Use $\Delta t = 2$.
 - (b) Represent these upper and lower estimates on the graph.
 - (c) Show how you would represent upper and lower estimates using $\Delta t = 1$. Do not calculate numerical values for the estimates.
 - (d) Suppose you needed to know how much soy milk was released into the environment to within 4 gallons. What Δt would you choose?



Time in days



Time in days



