Chapter 5.2:
The Definite Integral and Averages
Calculus II
College of the Atlantic

Figure 1: Three cats, all of whom have an average speed of zero.

The velocity of a cat is given by $v(t) = t^2$.

1. Write an expression for the average speed of the cat from $t = 1$ to $t = 3$.

2. Using a Δt of 0.5, approximate the average speed of the cat from $t = 1$ to $t = 3$.

3. Sketch $v(t)$ from $t = 0$ to $t = 4$.

4. Write an expression for the total distance the cat travels from $t = 1$ to $t = 3$.

5. Draw on your sketch an area that represents the distance the cat travels from $t = 1$ to $t = 3$.

6. Draw on your sketch a length that represents the average velocity of the cat from $t = 1$ to $t = 3$.