

## Calc I - Review for Quiz 3

We have our next quiz this Fri, Apr 4. All the problems on that quiz will likely look like something you see on this problem sheet, though this sheet is a bit longer than the quiz will be.

1. In this problem, you're going to find a good rational approximation to  $\sqrt{3}$ . To do so, let  $f(x) = x^3 - 3$ . Then,
  - a. Find the associated Newton's method iteration function  $N(x)$ .
  - b. Take two Newton steps from the value  $x_0 = 1$ .
2. Suppose I throw a rock off an 80 foot high cliff with a vertical velocity of 22 feet per second.
  - a. Find an equation for the height  $y(t)$  as a function of time.
  - b. How high does the rock go?

Recall that the acceleration due to gravity near the surface of the earth is  $-32\text{ft/s}^2$ .

3. Figure [Figure 1](#) shows the graph of a function  $f$  over the interval  $[-2, 2]$ . Compute

$$\int_{-2}^2 f(x) dx.$$

4. At 12:00 noon, the Aquaholic is 30 miles due west of Isle le Marka and sailing east at 20 mile per hour. At the same time, the Rum Runner is 10 miles due South of Isle le Marka and sailing South at 30 miles per hour.
  - a. Find the rate of change of the distance between the two boats.
  - b. Are the boats getting closer together or farther apart?

## Figures

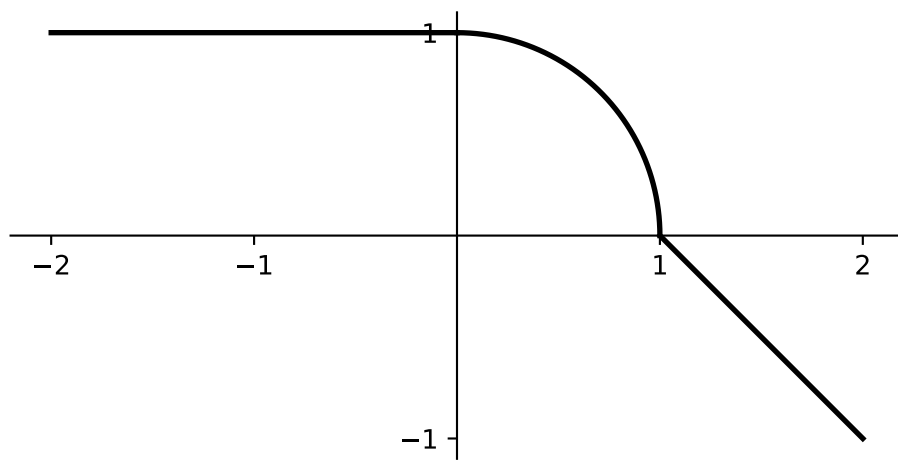


Figure 1: The graph of a function to integrate