Lesson 7

Read Chapter 6

Multipart functions

Semicircles

Consider $x^2 + y^2 = 4$

Top semicircle is $y = \sqrt{4 - x^2}$

Bottom, semicircle is $y = -\sqrt{4 - x^2}$

Consider $(x - x_0)^2 + (y - y_0)^2 = r^2$

Top semicircle is $y = y_0 + \sqrt{r^2 - (x - x_0)^2}$

Bottom, semicircle is $y = y_0 - \sqrt{r^2 - (x - x_0)^2}$

Multipart functions

$$h(x) = \begin{cases} f(x) & \text{if } x \text{ satisfies some condition} \\ g(x) & \text{if } x \text{ satisfies another condition} \end{cases}$$

$$|x| = \begin{cases} x & \text{if } x \geq 0 \\ -x & \text{if } x < 0 \end{cases}$$

$$h(x) = \begin{cases} 2x + 3 & \text{if } x \geq 1 \\ 5x & \text{if } x < 1 \end{cases}$$
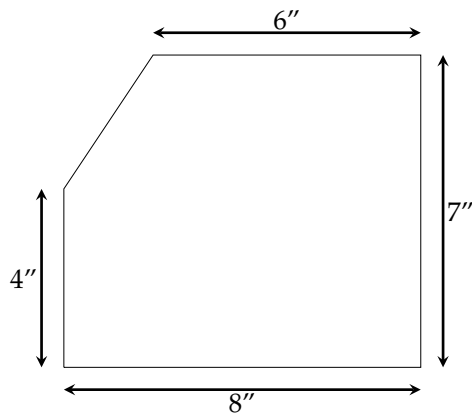
$$k(x) = \begin{cases} 2x + 1 & \text{if } x \geq 1 \\ 5x & \text{if } x < 1 \end{cases}$$

Given $f(x) = |3x + 5|$ graph $f(x)$, find the multipart rule for $f(x)$ and solve $f(x) = -2x - 5$

1. You have a pizza shaped as shown below.

6″

7″

4″

8″

You are going to cut the pizza with a vertical cut x inches from the left edge.

Express the area to the left of the cut as a multipart function of x.