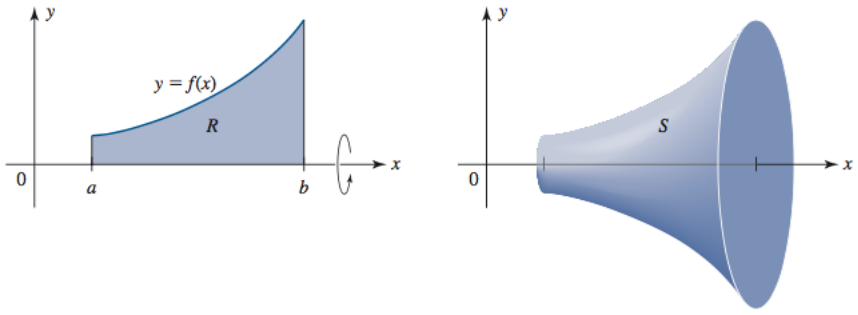
Name:_____

Notesheet. Section 7.5: Surfaces of Revolution

Math 1220

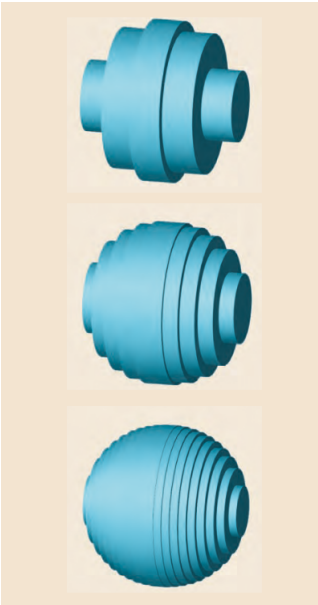
Definition 1. A solid of revolution is



(a) Region R under the curve

(b) Solid obtained by revolving R about the x-axis

Challenge 2. We try to approximate the volume of a sphere by looking at the surface of revolution given by rotating the region under $f(x) = \sqrt{r^2 - x^2}$ (a semicircle) on $[-r, r]$.



Theorem 3. The volume V of the solid of revolution obtained by revolving the region below the graph of a nonnegative function $y = f(x)$ from $x = a$ to $x = b$ about the x-axis is

$$V =$$

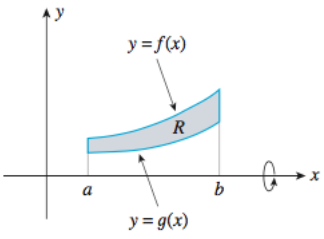
Challenge 4. Compute the volume of the following solids of revolution.

(a) Let $f(x) = \frac{1}{3}x$ and rotate the area under the function from $[0, 3]$ around the x-axis.

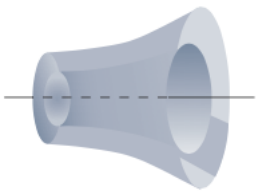
(b) Let $f(x) = 4$ and rotate the area under the function from $[0, 7]$ around the x-axis.

Theorem 5. Let R be a region bounded by the curves $y = f(x)$ and $y = g(x)$ from $x = a$ to $x = b$. Then, the volume V of the solid of revolution obtained by revolving R about the x-axis is given by

$$V =$$



(a) R is the region bounded by the curves $y = f(x)$ and $y = g(x)$ from $x = a$ to $x = b$.



(b) The solid of revolution obtained by revolving R about the x-axis.