8.2 Volume of Surface of Revolutions

1. Sketch a graph of the object you want to find the volume of

2. What axis are you revolving about?

3. Slice perpendicular to this axis of revolution. Sketch a picture of a Riemann slice on your graph.

4. Which is the infinitesimal part of the slice? Circle: Δx or Δy

5. Is the slice a solid cylindrical region or an annular/washer region?

   If it is a solid region, what is r in terms of the integration variable?

   If it is an annular region, what is r_{outer}? What is r_{inner} in terms of this variable?

6. What is the Riemann sum approximation? $\sum$

7. What is a and b? Write the integral?

   Common forms: $\int_a^b \pi r^2 dx$ or $\int_a^b \pi(r_{outer}^2 - r_{inner}^2)dx = \int_a^b \pi r_{outer}^2 dx - \int_a^b \pi r_{inner}^2 dx$

---

1. Sketch a graph of the object you want to find the volume of

2. What axis are you revolving about?

3. Slice perpendicular to this axis of revolution. Sketch a picture of a Riemann slice on your graph.

4. Which is the infinitesimal part of the slice? Circle: Δx or Δy

5. Is the slice a solid cylindrical region or an annular/washer region?

   If it is a solid region, what is r in terms of the integration variable?

   If it is an annular region, what is r_{outer}? What is r_{inner} in terms of this variable?

6. What is the Riemann sum approximation? $\sum$

7. What is a and b? Write the integral?

   Common forms: $\int_a^b \pi r^2 dx$ or $\int_a^b \pi(r_{outer}^2 - r_{inner}^2)dx = \int_a^b \pi r_{outer}^2 dx - \int_a^b \pi r_{inner}^2 dx$

1. Sketch a graph of the object you want to find the volume of

2. What axis are you revolving about?
3. Slice perpendicular to this axis of revolution. Sketch a picture of a Riemann slice on your graph.
4. Which is the infinitesimal part of the slice? Circle: Δx or Δy
5. Is the slice a solid cylindrical region or an annular/washer region?
   If it is a solid region, what is r in terms of the integration variable?
   If it is an annular region, what is r_{outer}? What is r_{inner} in terms of this variable?

6. What is the Riemann sum approximation? $\sum$
7. What is a and b? Write the integral?
   Common forms: $\int_a^b \pi r^2 dx$ or $\int_a^b \pi(r_{outer}^2 - r_{inner}^2)dx = \int_a^b \pi r_{outer}^2 dx - \int_a^b \pi r_{inner}^2 dx$

---

1. Sketch a graph of the object you want to find the volume of

2. What axis are you revolving about?
3. Slice perpendicular to this axis of revolution. Sketch a picture of a Riemann slice on your graph.
4. Which is the infinitesimal part of the slice? Circle: Δx or Δy
5. Is the slice a solid cylindrical region or an annular/washer region?
   If it is a solid region, what is r in terms of the integration variable?
   If it is an annular region, what is r_{outer}? What is r_{inner} in terms of this variable?

6. What is the Riemann sum approximation? $\sum$
7. What is a and b? Write the integral?
   Common forms: $\int_a^b \pi r^2 dx$ or $\int_a^b \pi(r_{outer}^2 - r_{inner}^2)dx = \int_a^b \pi r_{outer}^2 dx - \int_a^b \pi r_{inner}^2 dx$