Problem Set 42: Disc and Washer Method

Use the disc or washer method to find the volume of the following problems. **You may use a calculator to evaluate the integrals.**

1. Consider the region bounded by $y = 4, y = 0, x = -2$, and $x = 3$.

    a) What is the volume when you revolve the region around the line $x = -2$?

    b) What is the volume when you revolve the region around the x-axis?

2. Consider the region bounded by $y = e^x$, $y = 0$, $x = 1$, and $x = 4$.

   a) What is the volume when you revolve the region around the x-axis?

   b) What is the volume when you revolve the region around the line $y = -2$?

3. Consider the region bounded by $y = \sin x$, $x = 0$, $x = \pi$, and $y = 0$.

    a) What is the volume when you revolve the region around the line $y = 2$?

    b) What is the volume when you revolve the region around the line $y = -1$?

4. Consider the region bounded by $y = -x$, $y = \sqrt{x}$, and $x = 1$.

   a) What is the volume when you revolve the region around the line $x = 1$?

   b) What is the volume when you revolve the region around the line $y = 1$?

5. Consider the region bounded by $x = y^2 - 1$ and $x = -y^2 + 1$.

   a) What is the volume when you revolve the region around the line $y = 1$?

   b) What is the volume when you revolve the region around the line $x = 2$?