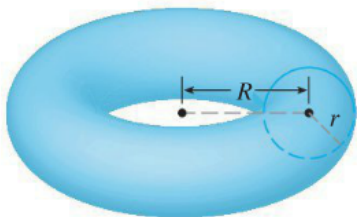


Written Homework #2**Due at start of class Monday 29 January.**

This Written Homework has problems from sections 6.2, 6.3, 6.4, and 6.5. It is also a “work sheet” to do during the Tuesday recitation section. Please work on it with other students! The submitted version will, of course, be written by you. You must show your work for full credit.

1. (a) Use washers to set up an integral for the solid torus, as shown.



- (b) Simplify the integral as far as you can. Interpret the simplified form as an area of a region. Thereby get the formula for the volume of a torus: $V = 2\pi^2 r^2 R$.

2. (a) Use cylindrical shells to set up an integral for the volume of the solid generated by rotating the region bounded by the given curves around $y = 5$:

$$x^2 - y^2 = 7, \quad x = 4$$

(b) Use your calculator or Matlab or an online tool (etc.) to evaluate the integral correct to four decimal places. (Indicate what tool you used.)

3. A chain lying on the ground is 10 m long and its mass is 80 kg. How much work is required to raise one end of the chain to a height of 6 m?

4. Find the average value of the function on the given interval:

$$g(t) = \frac{t}{\sqrt{3+t^2}}, \quad [1, 3]$$