

QUIZ 8: LESSONS 13-14
FEBRUARY 17, 2017

Write legibly, clearly indicate the question you are answering, and put a box or circle around your final answer. If you do not clearly indicate the question numbers, I will take off points. If you have any questions, raise your hand and I will come over to you.

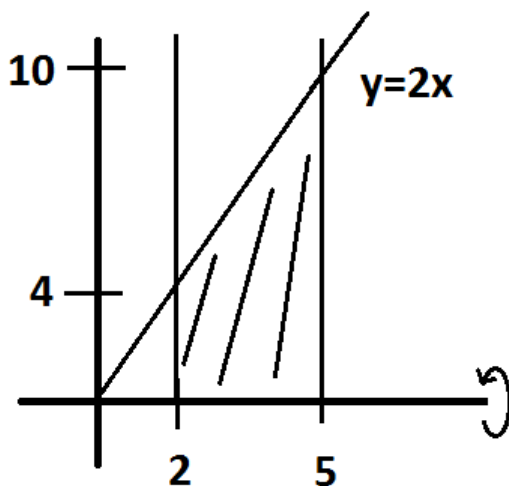
Let A be the region enclosed by the curves

$$y = 2x, \quad y = 0, \quad x = 2, \quad x = 5.$$

Setup but do **not** evaluate the integral(s) which describe the volume of the solid generated by revolving region A about:

1. [2 pts] the x -axis

Solution:

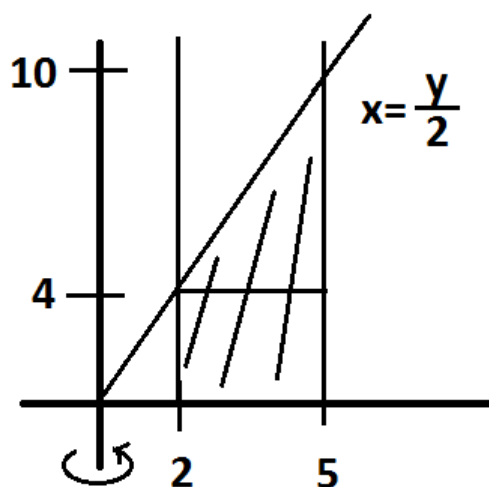


So our integral becomes

$$\int_2^5 \pi(2x)^2 dx$$

2. [2 pts] the y -axis

Solution:

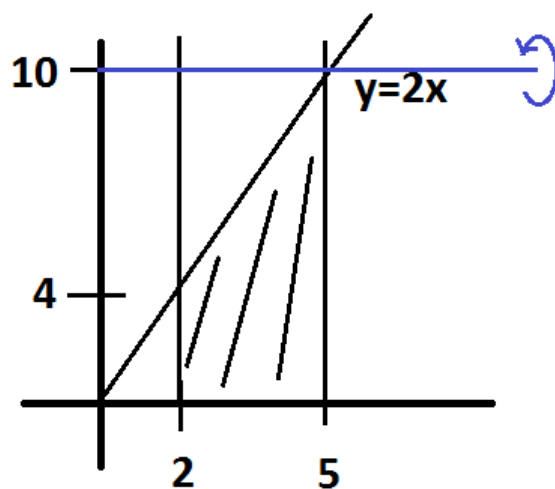


Since this is around the y -axis, our function becomes $x = \frac{y}{2}$. So breaking this into two pieces our volume is given by

$$\int_0^4 \pi [(5)^2 - (2)^2] dy + \int_4^{10} \pi \left[(5)^2 - \left(\frac{y}{2} \right)^2 \right] dy.$$

3. [3 pts] the line $y = 10$

Solution:

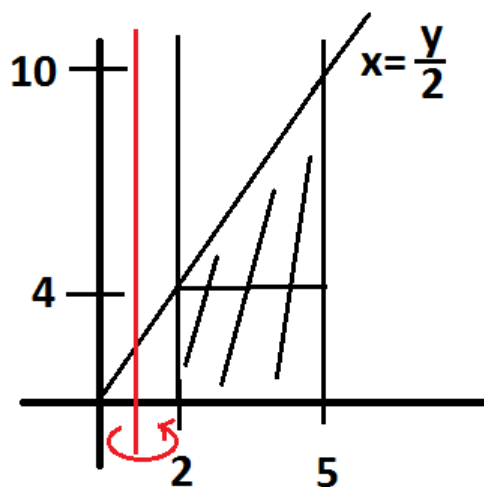


Our integral is given by

$$\int_2^5 \pi [(10)^2 - (10 - 2x)^2] dx.$$

4. [3 pts] the line $x = 1$

Solution:



Our integral is

$$\int_0^4 \pi \left[(5-1)^2 - (2-1)^2 \right] dy + \int_4^{10} \pi \left[(5-1)^2 - \left(\frac{y}{2} - 1 \right)^2 \right] dy.$$