

Name: _____

Area and Volume Homework

Math 1220

In this homework, we will compute some areas and volumes.

Challenge 1. Consider the function $f(x) = \frac{1}{x}$. Find the area of the region bounded by $y = f(x)$, $y = 0$, $x = -e^2$, and $x = -e$.

Challenge 2. Let R be the region to the right of $x = 1$ bounded above by the curve $y = f(x) = \frac{1}{x}$ and bounded below by $y = 0$. Is the area of R finite or infinite? If it is finite, compute the area and if it is infinite, justify your answer.

Challenge 3. Now, take this region R and revolve it around the x -axis to create “Gabriel’s horn.” Compute the volume of Gabriel’s horn. (This picture, but solid instead of hollow.)

