

(P556 #27) 2. Consider the region R = {(x, y) | 0 ≤ y ≤ 1/x} rotated about the x-axis (this object is called Gabriel's horn).
(a) Compute the volume of the resulting solid.
(b) Prove that is surface area is *infinite*.



(P556 #33) 3. If the curve y = f(x), $a \le x \le b$, is rotated about the horizontal line y = c, where $f(x) \le c$, find a formula for the area of the resulting surface. Draw a sketch!

(P555 eg3) 4. Set up the integral to find the area of the surface generated by rotating the curve $y = e^x$, $0 \le x \le 1$, about the *x*-axis. Draw a sketch!

(P556 #31) 5. The ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ for a > b is rotated about the x-axis to form a surface called and ellipsoid (or a prolate spheroid). Write an integral for the surface area of this ellipsoid. [You do not need to compute this integral]. **Draw a sketch!**