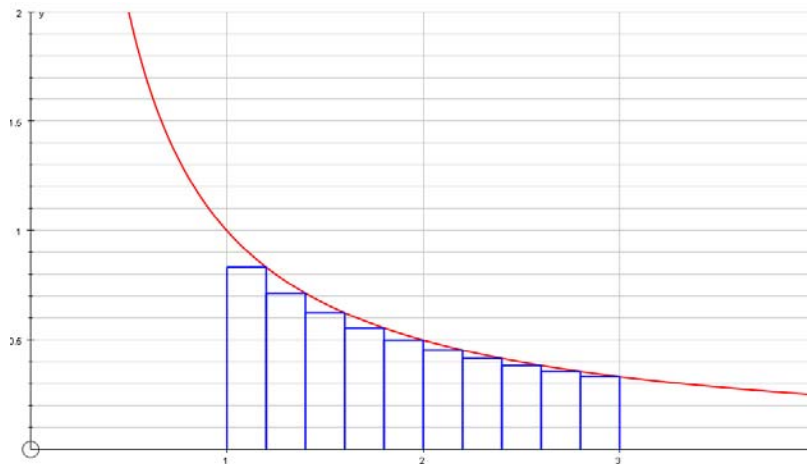


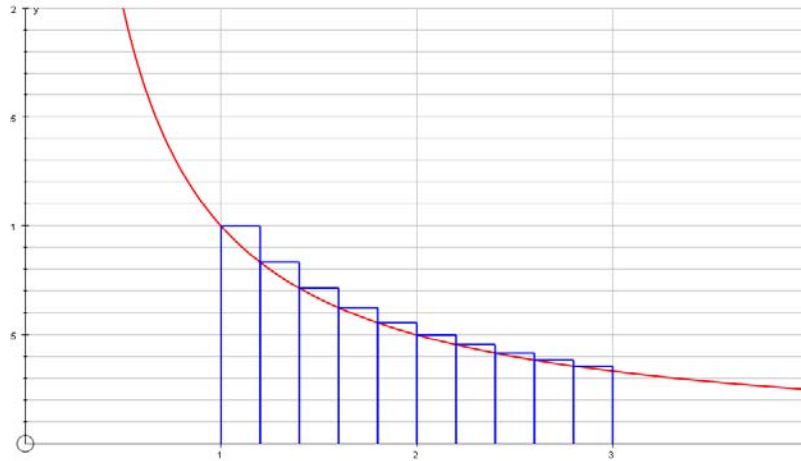
Clearly, **circumscribed rectangles will over-estimate** the actual area, and **inscribed rectangles will under-estimate** the actual area. An average of the two could approximate the actual area.

$$\text{Area calculated using inscribed rectangles} \leq \text{Actual Area} \leq \text{Area calculated using circumscribed rectangles}$$

Use upper and lower sums to approximate the area of the region bounded by $x = 1$, $x = 3$, $f(x) = 1/x$, and $y = 0$. Use 10 subintervals of equal length.



Use upper and lower sums to approximate the area of the region bounded by $x = 1$, $x = 3$, $f(x) = 1/x$, and $y = 0$. Use 10 subintervals of equal length.



Homework

p.407

25 - 30