

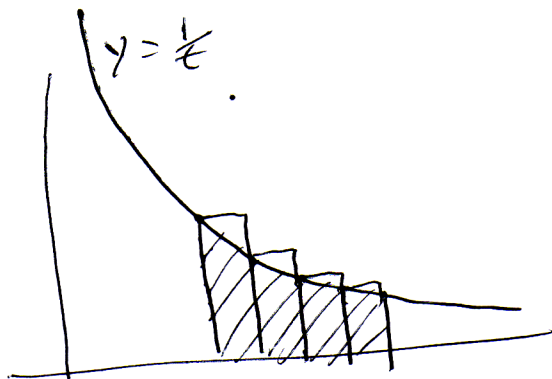
3. [12]

(a) Write the Riemann sum R_4 with 4 terms, using left end points, for $\int_1^2 \frac{1}{t} dt$. You don't need to simplify your sum. $t_0 = 1$ $t_1 = \frac{5}{4}$ $t_2 = \frac{6}{4}$ $t_3 = \frac{7}{4}$ $t_4 = 2$

$$R_4 = \left(\frac{1}{1} + \frac{4}{5} + \frac{4}{6} + \frac{4}{7} \right) \cdot \frac{1}{4}$$

$$\left(R_4 = \left[\frac{1}{t_0} + \frac{1}{t_1} + \frac{1}{t_2} + \frac{1}{t_3} \right] \frac{2-1}{4} \right)$$

(b) Sketch the areas represented by your sum R_4 and the integral on the same graph.



(c) Write an inequality between your sum R_4 and the integral.

$$R_4 > \int_1^2 \frac{1}{t} dt$$