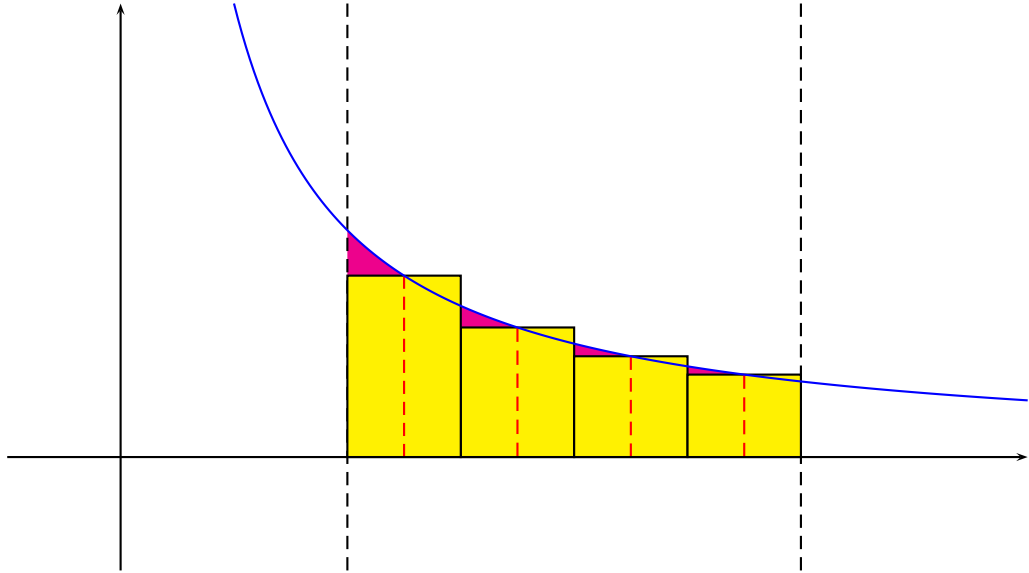


**Quiz 9**  
**Math 31-6429**

1. Consider the region bounded by the graph of  $y = \frac{1}{x}$ , the  $x$ -axis and the vertical lines  $x = 1$  and  $x = 3$ .



- (a) Partition the interval  $[1, 3]$  into four equal subintervals and calculate the midpoint of each of these intervals.

- (b) Calculate the area of each of the corresponding rectangles.

- (c) Calculate the corresponding midpoint Riemann sum for the integral:  $\int_1^3 \frac{dx}{x}$ .

2. Consider a particle moving on a straight line and its in such a way that its velocity at time  $t$  is given by the equation

$$v(t) = 2 \sin 3t, \quad 0 \leq t \leq \pi$$

- (a) Find the displacement of the particle.

- (b) Find the total distance traveled by the particle.

3. Consider the function  $f(x) = x^2 + x - 6$  Find the area of the region contained between the graph of  $y = f(x)$  the  $x$ -axis and the lines  $x = -4$  and  $x = 1$ .

4. Find the following definite integral:

$$\int_0^1 2x\sqrt{3-x^2} dx$$