

Name Solutions

Show all work; partial credit depends on this. No humming.

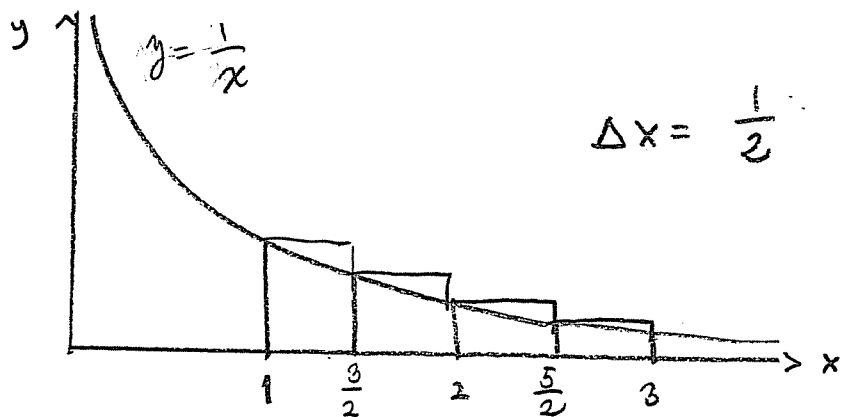
1. [10] Compute
- M_4
- to estimate the distance traveled over
- $[0, 4]$
- .

t (hours)	0	0.5	1	1.5	2	2.5	3	3.5	4
v (miles/hour)	0	(10)	20	(30)	20	(10)	0	(-10)	-20

$$\Delta t = 1$$

$$\begin{aligned} \text{Distance traveled} &\approx (10) \cdot 1 + (30) \cdot 1 + (10) \cdot 1 + (-10) \cdot 1 \\ &= \underline{\underline{40 \text{ miles}}} \end{aligned}$$

2. [10] Calculate
- L_4
- to approximate the area under
- $f(x) = 1/x$
- from
- $x = 1$
- to
- $x = 3$
- . Sketch the function and the rectangles involved in the approximation.



$$\begin{aligned} L_4 &= f(1) \frac{1}{2} + f\left(\frac{3}{2}\right) \frac{1}{2} + f(2) \frac{1}{2} + f\left(\frac{5}{2}\right) \frac{1}{2} \\ &= 1\left(\frac{1}{2}\right) + \left(\frac{2}{3}\right) \frac{1}{2} + \left(\frac{1}{2}\right) \frac{1}{2} + \left(\frac{2}{5}\right) \frac{1}{2} \\ &= \left(1 + \frac{2}{3} + \frac{1}{2} + \frac{2}{5}\right) \frac{1}{2} \\ &= \underline{\underline{\frac{77}{60}}} \end{aligned}$$