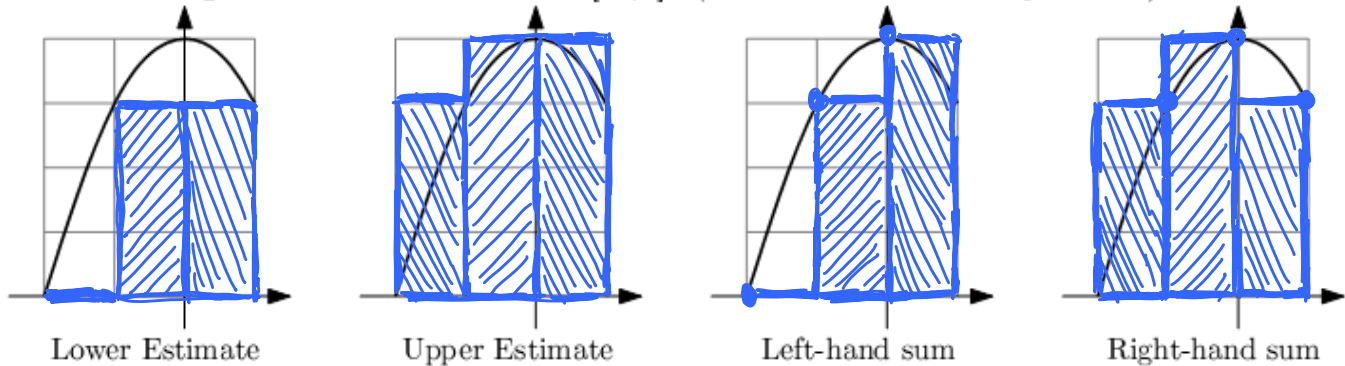


QUIZ 6 Solutions

Oct 22, 2007

1. In the graphs below carefully sketch rectangles for the corresponding estimates with $n = 3$ rectangles each on the interval $[-2, 1]$. (Each box is a unit by a unit)



2. Jim is riding his motorcycle at speed given by $v(t) = 35 - 8 \cdot (.5)^t$. He started riding at $t = 0$ and rode for 4 hours.

(a) Estimate the distance traveled using Left Hand Sum with $n = 2$.

$$[a, b] = [0, 4]$$

$$n = 2$$

$$\Delta t = \frac{b-a}{n} = \frac{4-0}{2} = 2$$

t	0	2	4
$v(t)$	27	33	34.5

$$LHS = 2 \cdot 27 + 2 \cdot 33 = 120$$

(b) Estimate the distance traveled using Left Hand Sum with $n = 6$.

$$[a, b] = [0, 4]$$

$$n = 6$$

$$\Delta t = \frac{b-a}{n} = \frac{4-0}{6} = \frac{4}{6} = \frac{2}{3}$$

t	0	$\frac{2}{3}$	$\frac{4}{3}$	2	$\frac{8}{3}$	$\frac{10}{3}$	4
$v(t)$	27	29.96	31.83	33	33.74	34.21	34.5

$$LHS = \frac{2}{3} \cdot (27 + 29.96 + 31.83 + 33 + 33.74 + 34.21) = 126.49\bar{3}$$

(c) Using a calculator evaluate $\int_0^4 35 - 8 \cdot (.5)^x dx$ which gives the actual distance.

$$Y1 = 35 - 8 * (.5^X)$$

2nd Trace

7

0

4

→ 129.1797

3. Expand the following into a summation and compute its value: $\sum_{i=3}^5 (2i-1)^2$

$$\sum_{i=3}^5 (2i-1)^2 = \underset{i=3}{(2 \cdot 3 - 1)^2} + \underset{i=4}{(2 \cdot 4 - 1)^2} + \underset{i=5}{(2 \cdot 5 - 1)^2} = 5^2 + 7^2 + 9^2 = 25 + 49 + 81 = 155$$