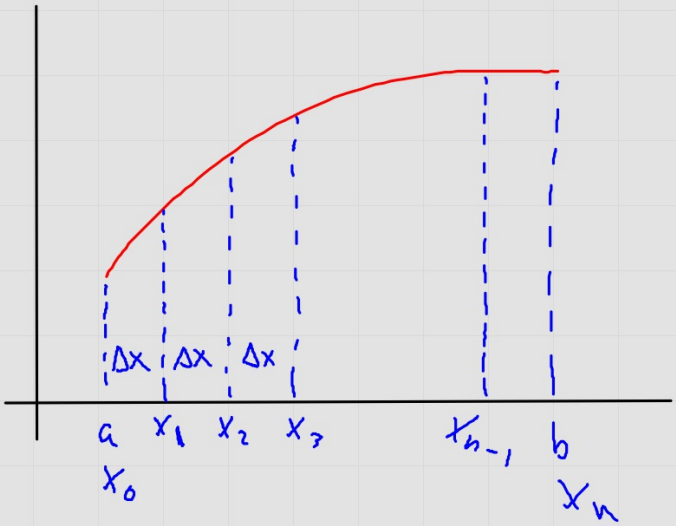
Approximating Area via Riemann Sums



$$A_L \approx \sum_{i=0}^{n-1} f(x_i)\Delta x \qquad A_R \approx \sum_{i=1}^{n} f(x_i)\Delta x$$

$f(x) = x^2 + 5x + 6$, $x = 1$, $x = 6$, 4 sub L.S. R.S

$$\Delta x = \frac{5}{4} = 1.250$$

$x_0 = 1$
$x_1 = 2.250$
$x_2 = 3.500$
$x_3 = 4.750$
$x_4 = 6$

$$A_L \approx \sum_{i=0}^{3} f(x_i)\Delta x$$

$$\approx (1.250)(122.375)$$

$$\approx 152.969$$

$$A_R \approx \sum_{i=1}^{4} f(x_i)\Delta x$$

$$\approx (1.250)(182.375)$$

$$\approx 227.969$$

STEPS

$y1 = f(x)$

Calc. ΔX

$seq(x, x, a, b, \Delta X)$

Edit list $\rightarrow a$

$sum(y1(a))$

$* \Delta X$

$seq(x, x, a + \frac{\Delta X}{2}, b, \Delta X) \rightarrow a$

no edit

$f(x) = x^2 + 5x + 6$, $x = 1$, $x = 5$, 5 subs, M.S.

$$\Delta x = \frac{4}{5} = .800$$

$x_0 = 1 \longrightarrow m_1 = 1.400$

$x_1 = 1.800 \longrightarrow m_2 = 2.200$

$x_2 = 2.600 \longrightarrow m_3 = 3$

$x_3 = 3.400 \longrightarrow m_4 = 3.800$

$x_4 = 4.200 \longrightarrow m_5 = 4.600$

$x_5 = 5$

$$A_M \approx \sum_{i=1}^{5} f(m_i)\Delta x$$

$$\approx (.8)(156.400)$$

$$\approx 125.120$$