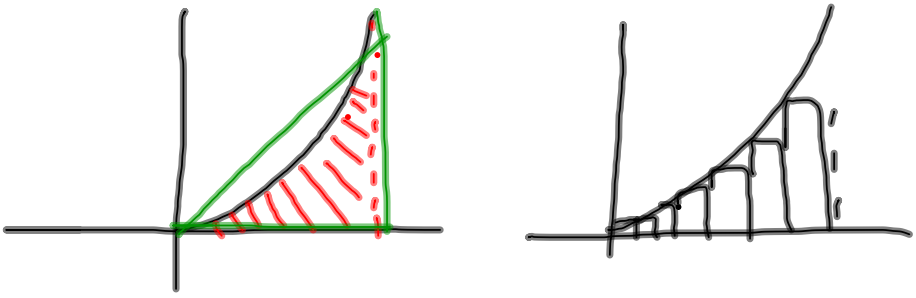
5.1 Estimating with Finite Sums

$$\int_a^b f(x)\,dx$$

→ Find the area between the curve f(x) and the x-axis between [a, b]

↳ sum



RAM = Rectangle Approximation Method

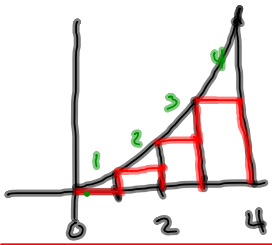
LRAM - **Left** Rectangle Approximation Method

RRAM - **Right** Rectangle Approximation Method

MRAM - **Midpoint** Rectangle Approximation Method

Ex 1) Estimate the area under $y = x^2$ [0, 4] using 4 rectangles.

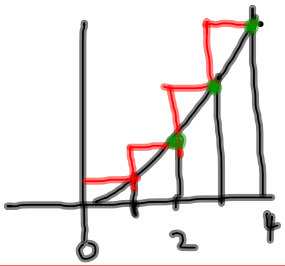
LRAM



A = bh

#1 =
#2 =
#3 =
#4 =

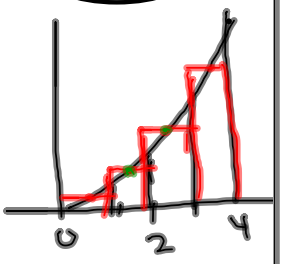
RRAM



A = bh

#1 =
#2 =
#3 =
#4 =

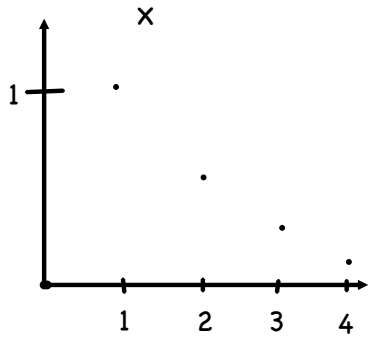
MRAM



A = bh

#1 =
#2 =
#3 =
#4 =

Ex 2) $y = \frac{1}{x}$ Estimate the area in the interval [2, 4] using 4 rectangles.



base = $\frac{b - a}{\#\text{ of rectangles}}$

LRAM

A = bh

#1 =
#2 =
#3 =
#4 =

RRAM

A = bh

#1 =
#2 =
#3 =
#4 =

MRAM

A = bh

#1 =
#2 =
#3 =
#4 =