

## REVIEW: RECTANGULAR METHOD APPROXIMATIONS

Use the rectangular method for approximating areas under the curve or integrals.

**Example 1:** approximate  $\int_0^6 (x^2 + 1) dx$  using  $n=3$  and Rram.

First calculate the width of the rectangle using  $\frac{b-a}{n} \Rightarrow \frac{6-0}{3} = 2$

x	0	2	4	6
f(x)	1	5	17	37

R ram:

$$A = 2(5+17+37) = 2(59) = 118$$

**Example 2:** approximate  $\int_2^{10} (3x - 1) dx$  using  $n=2$  and the midpoint rectangular method.

Width =  $\frac{10-2}{2} = 4$  that means the x values would be 2,6,10...but we need the midpoint between those...so:

x	2	4	6	8	10
f(x)	5	11	17	23	29

Mram:

$$A = 4(11+23) = 4(34) = 136$$

Problems: approximate the following with A) Rram B) Lram C) Mram **No calculator**

1.  $\int_0^2 x^2 dx$   $n=4$

2.  $\int_0^2 x^3 dx$   $n=2$

3.  $\int_1^7 (2x + 3) dx$   $n=3$

4.  $n=4$

x	1	3	5	7	9	11	13	15	17
f(x)	6	3	8	11	5	2	8	9	2

5.  $n=3$

x	3	4	5	6	7	8	9
f(x)	2	0	14	3	9	9	10