

# Review

DATE

Key

NAME

## 5.1-5.3 Chapter 5

1. 430 u<sup>2</sup>

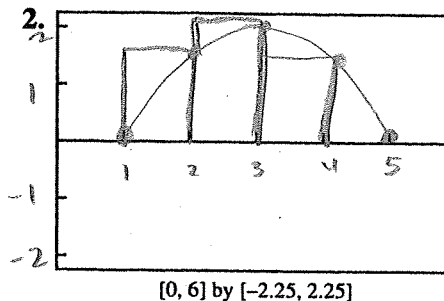
1. The table shows the velocity of a bicyclist riding for 30 seconds. Use the right-endpoint values (LRAM) to estimate the distance using 6 intervals of length 5.

Time (sec)	0	5	10	15	20	25	30
Velocity (ft/sec)	0	6	12	18	26	24	22

$$5 \cdot 0 + 5 \cdot 6 + 5 \cdot 12 + 5 \cdot 18 + 5 \cdot 26 + 5 \cdot 24$$

$$0 + 30 + 60 + 90 + 130 + 120 = 430$$

2. Sketch the region  $R$  enclosed between the graph of  $y = -\frac{1}{2}x^2 + 3x - \frac{5}{2}$  and the  $x$ -axis for  $1 \leq x \leq 5$ . Partition  $[1, 5]$  into 4 subintervals and show the four rectangles that RRAM uses to approximate the area of  $R$ .



3. Find RRAM for the region described in question 2.

3. 5 u<sup>2</sup>

$$1(1.5) + 1(2) + 1(1.5) + 1(0) = 5$$

4. Find the average value of the function  $y = 2x^2 + 3x$  on the interval  $[2, 4]$ .

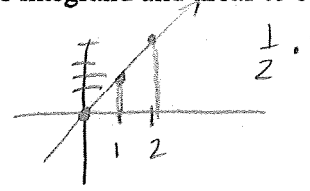
4.  $\frac{83}{3} = 27\frac{2}{3}$

$$\frac{1}{b-a} \int_a^b f(x) dx = \frac{1}{4-2} \int_2^4 (2x^2 + 3x) dx = \frac{1}{2} \left( \frac{2x^3}{3} + \frac{3x^2}{2} \right) \Big|_2^4$$

$$= \frac{2x^3}{6} + \frac{3x^2}{4} \Big|_2^4 = \left( \frac{2(4)^3}{6} + \frac{3(4)^2}{4} \right) - \left( \frac{2(2)^3}{6} + \frac{3(2)^2}{4} \right)$$

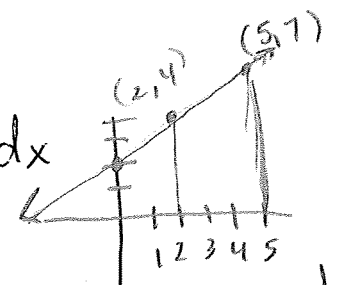
$$= 21\frac{1}{3} + 12 - \frac{8}{3} - 3 = \frac{64}{3} + \frac{36}{3} - \frac{8}{3} - \frac{9}{3} = \frac{83}{3}$$

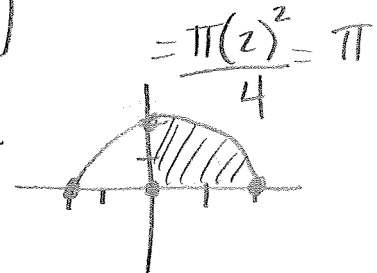
5. Use the graph of the integrand and areas to evaluate

a)  $\int_1^2 2x dx$    $\frac{1}{2} \cdot (2+4) \cdot 1 = 3$

5. 

a)	3
b)	16.5
c)	$\pi$

b)  $\int_2^5 (x+2) dx$    $\frac{1}{2} \cdot 3 \cdot (4+7) = 16.5$

c)  $\int_0^2 \sqrt{4-x^2} dx$    $= \frac{\pi(2)^2}{4} = \pi$

$y = \sqrt{4-x^2}$   
 $y^2 = 4-x^2$   
 $x^2+y^2=4$  ← circle

6. Suppose that  $\int_5^7 f(x) dx = 6$  and  $\int_5^7 g(x) dx = 10$ .

6. a) 16

Find the following.

a)  $\int_5^7 (f(x) + g(x)) dx = 6 + 10 = 16$

b) -6

b)  $\int_7^5 f(x) dx = -\int_5^7 f(x) dx = -6$

c) 20

c)  $\int_5^7 (2g(x)) dx = 2 \int_5^7 g(x) dx = 2 \cdot 10 = 20$