

## *Integrals Review Sheet*

1) Evaluate each integral:

a)  $\int (4 - 6x^2 + 10x^5) dx$

b)  $\int 6 \sec^2 3x dx$

2) Verify your answers to #'s 1(a) & 1(b) by differentiating your answers.

3) Find  $LRAM_5$ ,  $RRAM_5$ , and  $MRAM_5$  to estimate the area under the following curve (draw a picture for each estimation):

$$f(x) = x^2 + 2x - 1 \quad \text{from } x = 1 \text{ to } x = 6$$

4) Find the *actual* area under the curve  $f(x) = x^2 + 2x - 1$  from  $x = 1$  to  $x = 6$ .

5) Given:  $\int_{-2}^2 f(x) dx = 4$ ,  $\int_2^5 f(x) dx = 3$ , and  $\int_{-2}^5 g(x) dx = 2$

Find each of the following:

a)  $\int_5^2 2f(x) dx$

c)  $\int_2^2 f(x) dx$

b)  $\int_{-2}^5 [f(x) + g(x)] dx$

d)  $\int_5^{-2} [f(x) - g(x)] dx$

6) Find the average value for each function in the given interval.

a)  $f(x) = 3x^2 - 6x + 1$   $[-2, 4]$

b)  $f(x) = \sec^2 2x$   $[0, \pi/8]$

7) Evaluate each integral:

a)  $\int_{-1}^1 (3x^2 - 4x + 7) dx$

b)  $\int_1^2 \frac{4}{x^2} dx$

c)  $\int_{-\pi/3}^0 \sec x \tan x dx$

8) Find the area between the curve and the x-axis for each of the following:

a)  $y = 4 - x$   $0 \leq x \leq 6$

b)  $y = \cos x$   $-\pi \leq x \leq \pi$

9) Find the shaded area for each of the following:

