Name: _____

Calculus 1
Unit 5 Quiz 2 Review

Part I: No GRAPHING Calculators are permitted in this section!

1. Write out the terms for the given sequence and find the sum of each. (SHOW YOUR WORK!)

a) $\sum_{n=1}^{6}(2n+3)$

b) $\sum_{n=2}^{5}(3n^2+1)$

2. Write the following sum using sigma notation.

a) 5+7+9+11+13+15+17

b) $\frac{1}{3}+\frac{1}{9}+\frac{1}{27}+\ldots+\frac{1}{2187}$

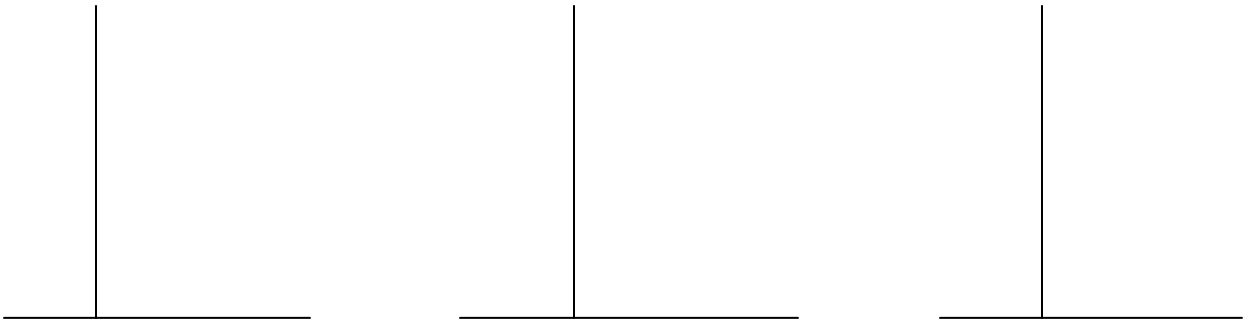
3. Use your special formulas to evaluate the following. (SHOW YOUR WORK!)

a) $\sum_{k=1}^{12}(2k^3-2k+7)$

b) $\sum_{k=6}^{18}(3k^2+2k)$

4. Draw the graph for the function and use LRAM, RRAM, and MRAM to approximate the area under the curve in the given interval for *n* rectangles.

$f(x)=x^2+2$ [-2,4] n=6



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Part II: GRAPHING Calculators are permitted in this section!

5. Apply the definite integral properties to the following to solve.

GIVEN:

$$\int_0^3 f(x)dx = 7 \ , \ \int_3^7 f(x)dx = 17 \ , \ \int_0^3 g(x)dx = 4$$

a) $\int_7^0 f(x)dx =$

b) $\int_0^3 [6g(x) - 3f(x)]dx =$

6. Use your calculator to find the following sums.

a) $\sum_{k=20}^{42}(3k^2 + 4k - 5)$

b) $\sum_{k=2}^{15}(-1)^k(k^2 - 4k)$

7. Use your calculator to approximate the area under the curve using the indicated method (LRAM, RRAM, and MRAM) over the given interval for *n* rectangles.

Use LRAM: $f(x) = x^3 + 2x + 7$ [-5,5] n=50

Use RRAM: $f(x) = \sqrt{x} + 4$ [0,6] n=60

Use MRAM: $f(x) = 5 + x + 2x^2$ [0,4] n=100

8. Evaluate the definite integrals.

a) $\int_{-2}^{4}(6x^2 - 10x + 3)dx$

b) $\int_{\frac{\pi}{2}}^{\pi} \cos x dx$

c) $\int_0^1 (4x+1)^5 dx$

d) $\int_0^3 \frac{t}{(t^2+3)^2} dt$

e) $\int_1^2 \frac{x^3 - 16}{x^2} dx$

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SOLUTIONS

1. a) 60 b) 166

2. a) $\sum_{k=0}^{6} 2k+5$ b) $\sum_{k=1}^{7} \frac{1}{3^k}$

3. a) 12096 b) 6474

4. LRAM: 31 u^2 RRAM: 43 u^2 MRAM: 35.5 u^2

5. a) -24 b) 3

6. a) 72,082 b) -91

7. LRAM: 43 u^2 RRAM: 33.9 u^2 MRAM: 70.67 u^2

8. a) 102 b) -1 c) 651

   d) .125 or $\frac{1}{8}$ e) -6.5

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