CALCULATORS ARE NOT PERMITTED.

The format of the exam is identical to the format of this review. Only the actual values in the questions will vary.

Multiple-Choice: There will be 20 multiple-choice questions (worth 3 points each.) Only your answer to these questions will receive credit.

Free-Response: (Total 20 points…exact points are listed in *italics* in each problem.) You must show a reasonable amount of work that leads to your answer. Where it is impossible to show work, explain the mental leaps that you made to draw your conclusion. (*5 points each)*
Consider the function $f(x) = x^2 + 4$ on [-2, 6]. Approximate the area under the curve on the given interval using each method specified.
A. Consider the function $f(x) = x^2 + 4$ on [-2, 6]. Approximate the area under the curve on the given interval using each method specified. **RRAM with n = 8.**
B. Consider the function $f(x) = x^2 + 4$ on [-2, 6]. Approximate the area under the curve on the given interval using each method specified. **MRAM with n = 8.**
C. Consider the function $f(x) = x^2 + 4$ on [-2, 6]. Approximate the area under the curve on the given interval using each method specified. **Trapezoidal Approximation with n = 8.**
D. Consider the function $f(x) = x^2 + 4$ on [-2, 6]. Approximate the area under the curve on the given interval using each method specified. **Simpson's Method with n = 8.**

Ch.5A Review

For each problem, approximate the area under the curve over the given interval using LRAM with n = 4.

1) $y = -x^2 + 11;\ [-1, 3]$

A) $\frac{115}{3} \approx 38.333$ B) 38

C) 40 D) 36

For each problem, approximate the area under the curve over the given interval using RRAM with n = 4.

2) $y = x^2 - 2x + 2;\ [-2, 2]$

A) 10 B) $\frac{31}{3} \approx 10.333$

C) 12 D) $\frac{29}{3} \approx 9.667$

For each problem, approximate the area under the curve over the given interval using 5 trapezoids.

3) $y = x^2 - 2x + 2;\ [-1, 4]$

A) $\frac{107}{6} \approx 17.833$ B) 17

C) $\frac{35}{2} = 17.5$ D) $\frac{39}{2} = 19.5$

Evaluate each sum.

4) $\sum_{k=1}^{n} 8k^2$

A) $8n^3 + 12n^2 + 4n$

B) $\frac{8n^3}{3} + 4n^2 + \frac{4n}{3}$

C) $\frac{32n^3}{3} + 16n^2 + \frac{16n}{3}$

D) $\frac{8n^3}{9} + \frac{4n^2}{3} + \frac{4n}{9}$

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

A) $\frac{2n^3}{9} + \frac{n^2}{3} + \frac{10n}{9}$

B) $\frac{n^3}{3} + \frac{n^2}{2} + \frac{5n}{3}$

C) $\frac{2n^3}{3} + n^2 + \frac{10n}{3}$

D) $\frac{4n^3}{3} + 2n^2 + \frac{20n}{3}$

For each problem, use a left-hand Riemann sum to approximate the integral based off of the values in the table.

6) $\int_0^9 f(x)\,dx$

x	0	5	6	7	9
$f(x)$	6	5	3	5	4

A) 38 B) 48
C) 53 D) 49

For each problem, use a right-hand Riemann sum to approximate the integral based off of the values in the table.

7) $\int_0^{10} f(x)\,dx$

x	0	5	7	9	10
$f(x)$	8	6	8	7	6

A) 59 B) 72
C) 70 D) 66

Evaluate each definite integral.

8) $\int_0^4 (-2x + 2)\,dx$

A) −12 B) −14
C) −16 D) −8

9) $\int_{-7}^{-3} (x + 2)\,dx$

A) −18 B) −12
C) −19 D) −13

10) $\int_{-4}^{-2} \frac{4}{x}\,dx$

A) $5 \ln 2 \approx 3.466$
B) $4 \ln 2 - 4 \ln 4 \approx -2.773$
C) $12 \ln 2 - 7 \ln 4 \approx -1.386$
D) $4 \ln 11 - 2 \ln 4 \approx 6.819$

11) $\int_{-1}^{2} -5x^{\frac{1}{3}}\,dx$

A) $\frac{-20\sqrt[3]{2} + 17}{5} \approx -1.64$
B) $\frac{-30\sqrt[3]{2} + 15}{4} \approx -5.699$
C) $\frac{-30\sqrt[3]{2} + 13}{9} \approx -2.755$
D) $\frac{33\sqrt[3]{7} - 15}{4} \approx 12.032$

Evaluate each indefinite integral.

12) $\int 4\,dx$

A) $4 + C$ B) C
C) $4x + C$ D) $-3x + C$

13) $\int \frac{-5x^2 - 4}{x^2}\,dx$

A) $-5x - \frac{4}{x} + C$

B) $-5x + \frac{4}{x} + C$

C) $-5 + \frac{4}{x^2} + C$

D) $-9x + C$

14) $\int \frac{6(-5x^{10} + 2)}{x^5}\,dx$

A) $-5x^5 - \frac{3}{x^5} + C$

B) $-18x + C$

C) $-5x^6 - \frac{3}{x^4} + C$

D) $-30x^6 + \frac{12}{x^4} + C$

15) $\int x^2(-20x^2 - 12x - 9)\,dx$

A) $-41x + C$

B) $-4x^4 - 3x^3 - 3x^2 + C$

C) $-4x^5 - 3x^4 - 3x^3 + C$

D) $-20x^5 - 12x^4 - 9x^3 + C$

16) $\int \frac{-32x^3x^{\frac{3}{5}} + 75x^3x^{\frac{1}{4}} - 200}{20x^3}\,dx$

A) $-x^{\frac{3}{5}} + 3x^{\frac{1}{4}} + \frac{5}{x^3} + C$

B) $-\frac{157x}{20} + C$

C) $-x^{\frac{8}{5}} + 3x^{\frac{5}{4}} + \frac{5}{x^2} + C$

D) $-\frac{8x^{\frac{8}{5}}}{5} + \frac{15x^{\frac{5}{4}}}{4} - \frac{10}{x^2} + C$

17) $\int -3 \cdot \csc^2 x\,dx$

A) $3\sin x + C$ B) $3\cos x + C$

C) $3\cot x + C$ D) $3\tan x + C$

18) $\int -2 \cdot \sec^2 x\,dx$

A) $-2\sec x + C$

B) $-2\tan x + C$

C) $-2\cos x + C$

D) $-2\cot x + C$

19) $\int -4\sin x\,dx$

A) $4\cot x + C$ B) $4\cos x + C$

C) $4\sec x + C$ D) $4\csc x + C$

20) $\int e^x\,dx$

A) $e^x + C$ B) $2e^x + C$

C) $4^x + C$ D) $\frac{4^x}{\ln 4} + C$

Answers to Ch.5A Review

1) B	2) A	3) C	4) B
5) C	6) B	7) D	8) D
9) B	10) B	11) B	12) C
13) B	14) C	15) C	16) C
17) C	18) B	19) B	20) A