

Math 201 GH **Exam # 3** May 11, 2016

Please **PRINT** your name as indicated below. Total: 100 pts + extra credit.

Last name: _____ **First:** _____

Write clearly and cross-out work not to be graded. All work is to be done directly on these pages as indicated, using back pages for scratch or continuation work.

SIMPLIFY when possible, and leave all answers in **exact** form.

NO notes, calculators, or other electronic devices allowed. **Cell phones must be turned off and placed out of site or they will be confiscated for the duration of the exam.**

Please have your college **ID** visible until I check it. I will tell you the seat number.

SEAT: _____ (leave blank initially)

GOOD LUCK!

Question	score	out of
1		10+5
2		15
3		5
4		10
5		60
Total:		100

1. (10 pts.) Approximate the integral $\int_1^5 x^2 dx$ using the **Riemann sum** with $n = 4$ equal length subintervals and right endpoints as the sample points:

Extra credit(+5 pts.): express the integral as the limit of Riemann sums using n equal subintervals and right endpoints as the sample points. You need NOT evaluate the limit.

2. (15 pts.) The velocity of a particle moving along a straight line is given by $v(t) = t^3 - 3t^2$ meters per second, $0 \leq t \leq 4$ seconds.

(a) Find the net displacement of the particle over the time interval $0 \leq t \leq 4$:

(b) Find the total distance traveled by the particle during $0 \leq t \leq 4$:

(c) Find the average velocity of the particle during the same time interval:

3. (5 pts.) State the Mean Value Theorem for Integrals (be sure to include any hypotheses):

4. (10 pts.) Let $f(x) = \int_{x^2}^1 \sin(t^4) dt$.

(a) Find $f(1)$:

(b) Find $f'(x)$:

5. (60 pts.) Evaluate the following integrals.

(a) $\int_1^2 (4x^3 - 3x^2 + 2x) \, dx$:

(b) $\int \sqrt{x}(3+x) \, dx$:

(c) $\int (x+1)\sqrt{2x+x^2} \, dx$:

(d) $\int \frac{\sec^2(4/x)}{x^2} \, dx$: