

MAT195S Calculus II
FINAL ASSESSMENT SCHEDULE
AND HOMEWORK ASSIGNMENT
Winter 2015
(as of March 30, 2015)

Midterm Tests - during the Eng Sci test periods (each counting for 17.5%)

Tuesday February 10, 9-11 (EX200)

Tuesday March 24, 9-11 (EX200)

Quizzes - during tutorial sessions (the best 5 of 7 quizzes together totalling 15%)

January 15, 22, 29

February 12, 26

April 2, 9

Recommended Minimum Problem Assignment - not to be handed in.

Chapter 7: Techniques of Integration

7.1: 7, 10, 24, 26, 27, 31, 39, 48, 51, 53, 63, 67, 70, 71

7.2: 3, 11, 15, 19, 26, 27, 31, 38, 41, 43, 57, 64

7.3: 9, 11, 13, 18, 23, 25, 29, 31, 39, 43

7.4: 9, 15, 17, 23, 33, 35, 37, 39, 45, 47, 59, 61, 63, 68

7.5: 7, 23, 31, 33, 41, 47, 49, 55, 57, 63, 67, 73, 77

7.6: ---

7.7: ---

7.8: 7, 15, 21, 29, 31, 37, 39, 53, 55, 60, 65, 68, 71, 77

Chapter 8: Further Applications of Integration

8.1: 7, 9, 13, 17, 31, 35, 39

8.2: 9, 11, 15, 25, 27, 29

8.3: 7, 13, 15, 27, 31, 41, 45

8.4: ---

8.5: ---

Chapter 10: Parametric Equations and Polar Coordinates

10.1: 9, 13, 15, 21, 28, 31, 33, 37, 41, 43, 45

10.2: 3, 5, 15, 17, 25, 29, 33, 41, 45, 51, 61, 65, 69, 73

10.3: 3, 5, 13, 19, 25, 29, 33, 41, 44, 51, 59, 63, 65

10.4: 7, 11, 17, 21, 27, 33, 41, 45, 47, 55

10.5: (5, 15, 19, 27, 51)

10.6: 9, 13, 21, 24, 27, 29

Chapter 11: Infinite Sequences and Series

- 11.1: 5, 17, 25, 41, 42, 47, 55, 69, 73, 80, 81, 90
 11.2: 17, 23, 35, 39, 43, 57, 67, 72, 77, 79, 85, (87)
 11.3: 5, 15, 21, 25, 29, 31, 35, 39, 45
 11.4: 7, 11, 19, 27, 33, 39, 45
 11.5: 11, 15, 19, 29, 33, 36
 11.6: 9, 11, 12, 19, 27, 31, 37, 38, (42)
 11.7: 8, 25, 27, 31, 33, 35, 37
 11.8: 5, 13, 19, 25, 37, 39
 11.9: 5, 11, 15, 27, 29, 39
 11.10: 5, 11, 15, 37, 43, 49, 59, 67, 74, 75
 11.11: 5, 17, 23, 25, 33, 35
 11.12: Binomial Series

- 1) Use the binomial series to expand the function as a power series. State the radius of convergence:

$$\sqrt[4]{1-8x} \quad \frac{x}{\sqrt{4+x^2}}$$

- 2) (a) Use the binomial series to expand $1/\sqrt{1-x^2}$.
 (b) Use part (a) to find the Maclaurin series for $\sin^{-1} x$.

- 3) (a) Expand $f(x) = x/(1-x)^2$ as a power series.

- (b) Use part (a) to find the sum of the series $\sum_{n=1}^{\infty} \frac{n}{2^n}$

11.13: Fourier Series: 1, 5, 9, 19 (from Stewart supplement)

All Continuous Functions are Integrable:

- 1) Find a function that is: a) not integrable
 b) integrable but not continuous
 c) continuous but not differentiable
- 2) Show that if P' is a refinement of P then $\|P'\| \leq \|P\|$.
- 3) Give an example of a function $f:[a,b] \rightarrow \mathbb{R}$ which is continuous but not uniformly continuous. Can you give an example of such a function which is bounded?
- 4) Find the upper and lower bounds for $\int_0^4 x^2 \sin(x) dx$.
- 5) Given f , a continuous function on $[a,b]$, and the upper sum defined by $U_{2^n} \equiv \frac{(b-a)}{2^n} \sum_{i=1}^{2^n} f_i^{\max}$, where f_i^{\max} is the maximum value of f in the interval $[x_{i-1}, x_i]$, show that U_{2^n} is bounded and monotonic, and thus convergent.
- 6) Show that every monotone function defined on $[a,b]$ is Riemann integrable (Challenge; look up Lebesgue's Theorem; use search engine).

Chapter 12:	Vectors and the Geometry of Space
12.5:	(1, 7, 19, 25, 35, 45, 51, 59, 65, 73, 77)
12.6:	13, 17, 19, 21-28, 33
Chapter 13:	Vector Functions
13.1:	3, 11, 13, 21-26, 27, 41, 49
13.2:	7, 13, 19, 21, 25, 35, 41, 45
13.3:	3, 13, 19, 23, 31, 35, 42, 49, (60, 61)
13.4:	5, 13, 19, 37, 41, 45, 46
Chapter 14:	Partial Derivatives
14.1:	9, 21, 29, 47, 59-64, 65
14.2:	13, 15, 19, 21, 25, 37
14.3:	23, 27, 47, 57, 67, 77, 78, 79, 88, 95, 97
14.4:	3, 5, 15, 21, 35, 43
14.5:	5, 9, 19, 23, 29, 35, 41, 47, 49
14.6:	5, 11, 17, 23, 35, 45, 49, 53, 61, 63
14.7:	11, 13, 23, 33, 37, 41, 47, 49, (55)
14.8:	5, 7, 15, 21, 31, 37, 37, 43, (Applied Project: Rocket Science)