

**MATHEMATICAL ANALYSIS**  
**STUDENT'S MANUAL MA 101R 3.3**

TRINITY INTERNATIONAL UNIVERSITY  
The REACH Program  
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## **COURSE OVERVIEW**

This course covers the basic elements in a college algebra course: solving algebraic equations, graphing functions, solving equations involving exponents and logarithms, and solving systems of equations.

We, however, go beyond the manipulation of symbols and the mechanical solution of equations. We develop the ability to translate certain real-life problems into mathematical problems. Some sections may not have many real-life applications, but these will lay the groundwork for later sections which are more applicable.

## COURSE SYLLABUS

### I. Course Description

MA 101R This course deals with concepts related to algebra, equations and inequalities, functions and graphs, systems of equations, and exponential and logarithmic functions as applied to practical life problems. 3 credits.

### II. Course Objectives

#### A. Skill Objectives

1. Solve algebraic equations and inequalities.
2. Graph lines, circles and other curves.
3. Solve equations involving exponential and logarithmic functions.
4. Solve systems of equations.

#### B. Application Objectives

1. Translate certain real-life problems into mathematical problems.
2. Develop critical thinking and problem-solving skills.
3. Appreciate mathematics as a subject that is interesting, beautiful and relevant.

### III. Textbook

Michael Sullivan, *College Algebra*, 8<sup>th</sup> ed. (Upper Saddle River, NJ: Prentice Hall, 2008) ISBN 0132402866. Note: the Trinity campus bookstore will probably not stock this textbook.

### IV. Course Outline (Assignments Due)

#### A. Session One

1. Write an autobiography of your learning experience in the area of mathematics. Write approximately 500 words typed in standard format (i.e. double spaced with one inch

margins on all sides).

### **B. Session Two**

1. On p. 106 do nos. 9, 13, 16, 18, 22, 23, 49, 52, 61, 99, 95, 101.
2. On p. 132 do nos. 11-15, 23-25, 33-35 (for 33-35, do not illustrate the inequality), 54-57, 69, 72, 109, 110.
3. On p. 160 do nos. 1, 7, 8, 11a, 12a, 15, 17, 39, 42, 61.
4. Group project: On p. 153 do Chapter Project 1 Exercises 4, 10-13.

### **C. Session Three**

1. On p. 171 do 39b, 40b, 41b, 42b, 43b, 44b, 51-53.
2. On p. 185 do 1, 7, 11a, 13a, 15, 21, 22, 39, 41, 43, 45, 51, 55, 57, 65, 72, 77, 111, 116, 117, 129, 134.
3. On p. 193 do 11, 14, 7, 9, 21ab, 22ab, 23ab, 27-29, 32, 38.
4. On p. 132 do 74, 112.
5. On p. 160 do 60.

### **D. Session Four**

1. On p. 199 do 2, 3, 8-10, 13, 15, 19, 23, 25, 29, 35, 39
2. On p. 219 do 3, 5, 47, 49, 51-53, 55, 57.
3. On p. 226 do 6, 9, 11-17 (for 11-17, just determine whether or not the graph is the graph of a function), 29, 31a-f, 36, 39, 41.
4. On p. 185 do 70, 119, 132, 142.
5. On p. 193 do 33, 40, 51.

### **E. Session Five**

1. On p. 238 do 11-16, 22d, 23d, 25d, 26d, 27d.
2. On p. 261 do 7, 10-16, 19-27, 37, 41, 51, 65abcfg.
3. On p. 290 do 2-4, 6-8, 19, 20, 21b-g. Also find the correlation coefficient in 19 and 20.
4. On p. 199 do 33, 41.
5. On p. 199 do 33, 41.
6. On p. 226 do 10, 30.
7. Group project: On p. 276 do Chapter Project I problems 1, 2.

### **F. Session Six**

1. On p. 407 do 7abc, 9, 10, 29ab, 33ab, 37ab (but do not bother to find the domain in 29ab, 33ab, 37ab).

2. On p. 419 do 15, 17-20, 22, 31, 41, 42, 72, 74, 76.
3. On p. 432 do 8, 10, 13, 17, 18, 79, 98, 99, 105. From among Problems 29-36, find the graphs which correspond to equations A, B and C.
4. On p. 261 do 30, 68abcfg.
5. On p. 290 do 21.

### G. Session Seven

1. On p. 446 do 4, 25-28, 34-37, 39, 117.
2. On p. 457 do 7-10, 33, 35-38, 41, 45, 51, 52, 57.
3. On p. 463 do 63, 68, 71, 74
4. On p. 407 do 42ac.
5. On p. 419 do 43.
6. On p. 432 do 95.
7. On p. 446 do 32.

### H. Session Eight

1. On p. 472 do 3-6, 15-17, 33, 39 (ignore the part about continuous compounding), 37, 48, 69a.
2. On p. 553 do 17, 20, 21, 25, 41, 43, 48, 58, 59, 60a, 62, 75, 79.

## V. Course Requirements

A. Complete all assignments in **Section IV** of the syllabus.

### B. Attendance Policy

Because of the accelerated nature of the REACH courses, students are required to attend every class session. Missing a single class means a significant portion of the contact with the faculty member and the learning community has been lost. **For this reason, in all REACH courses, students missing one class session will be penalized between one-half and one full letter grade.** If an exception to this policy is thought to be in order, the faculty member must consult with the Director of REACH Academic Services and receive approval. **Students missing more than one class period will receive no credit for the class and a grade of "F" will be recorded. The course must then be retaken in order to receive credit. In addition, students may miss no more than two class sessions in a given semester,** regardless of the circumstances. If a student misses more than two class sessions during a given semester, the student will be required to meet in person with the Director of REACH Student Services to discuss continuance in the Program. Students are responsible for monitoring their own attendance to make sure they do not exceed two classes per semester. The REACH

Office will also monitor attendance and notify the REACH Director of Student Services when a student exceeds two absences for a given semester.

Any student missing more than 30 minutes of a course session will be considered absent for the full course session. Participation points are earned and calculated in the final grade of a course based upon on-time attendance at each session. Students who miss three consecutive course sessions without prior notification to the REACH Office will be dropped from the program and will need to apply for readmission. See REACH Program Handbook for more information on attendance.

Late work will not be accepted unless the student requests an extension prior to the deadline and the instructor grants the request. There may also be a substantial penalty for late work. An extension on the time needed to submit final course requirements will only be granted in unusual circumstances and if the instructor and the Dean grant the request.

## VI. Grading Criteria

The MA 101R grade will be based on the following:

8 Homework assignments	160 points
2 Group projects	20
6 Quizzes	60
1 Exam	<u>120</u>
Total	360 points

For the homework assignments, show your work if there is any. If a problem requires work and you do not show any, you might not receive credit; we say this because we do not want to give credit to students who simply copy the answer out of the answer key in the back of the book.

## VII. Calculators

We will be using graphing calculators in this course, so you will need a graphing calculator. I recommend a Texas Instruments TI-83 because that is the one I will use in class. If you have a TI-81, TI-82, TI-84, TI-85, TI-86, TI-89 or TI-92 you need not buy the TI-83; your calculator will be fine. But if you have another kind of graphing calculator besides these, please ask me about it.