

NEW YORK CITY COLLEGE OF TECHNOLOGY
The City University of New York

DEPARTMENT:	Mathematics
COURSE:	MAT 1275
TITLE:	College Algebra and Trigonometry
DESCRIPTION:	An intermediate and advanced algebra course. Topics include quadratic equations, systems of linear equations, exponential and logarithmic functions; topics from trigonometry, including identities, equations and solutions of triangles.
TEXT:	Custom Text by McGraw-Hill containing material from <u>Intermediate Algebra</u> , 3 rd edition by Julie Miller, Molly O'Neill, and Nancy Hyde and <u>Trigonometry</u> , 2 nd edition by John Coburn
CREDITS:	4
PREREQUISITES:	MAT 1175 OR for New Students, scores of at least 45 on the Pre-Algebra part and 45 on the Algebra part of the CUNY Assessment Test in Mathematics.

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Spring 2013

- A. Testing/ Assessment Guidelines:
The following exams should be scheduled:
1. A one-hour exam at the end of the First Quarter.
 2. A one session exam at the end of the Second Quarter.
 3. A one-hour exam at the end of the Third Quarter.
 4. A one session Final Examination.
- B. A scientific calculator is required.

Course Intended Learning Outcomes/Assessment Methods

Learning Outcomes	Assessment Methods
1. Solve <ul style="list-style-type: none"> • Linear and fractional equations. • One-variable quadratic equations by factoring, completing the square, and the quadratic formula. • Radical and exponential equations. • Systems of equations. 	Classroom activities and discussion, homework, exams.
2. Perform operations with and simplify polynomial, rational, radical, complex, exponential, and logarithmic expressions.	Classroom activities and discussion, homework, exams.
3. Apply their knowledge of algebra and trigonometry to solve verbal problems.	Classroom activities and discussion, homework, exams.
4. <ul style="list-style-type: none"> • Solve problems involving right and oblique triangles. • Prove trigonometric identities. • Solve trigonometric equations. • Graph the sine and cosine function. 	Classroom activities and discussion, homework, exams.
5. Apply the distance and midpoint formulas and determine the graphs of circles and parabolas	Classroom activities and discussion, homework, exams.

General Education Learning Outcomes/Assessment Methods

Learning Outcomes	Assessment Methods
1. Understand and employ both quantitative and qualitative analysis to solve problems.	Classroom activities and discussion, homework, exams.
2. Employ scientific reasoning and logical thinking.	Classroom activities and discussion, homework, exams.
3. Communicate effectively using written and oral means.	Classroom activities and discussion, homework, exams.
4. Use creativity to solve problems.	Classroom activities and discussion, homework, exams.

Mathematics Department Policy on Lateness/Absence

A student may be absent during the semester without penalty for 10% of the class instructional sessions. Therefore,

If the class meets:

The allowable absence is:

1 time per week

2 absences per semester

2 times per week

3 absences per semester

Students who have been **excessively absent and failed the course at the end of the semester will receive either**

- the WU grade if they have attended the course at least once. This includes students who stop attending without officially withdrawing from the course.
- the WN grade if they have never attended the course.

In credit bearing courses, the WU and WN grades count as an F in the computation of the GPA. While WU and WN grades in non-credit developmental courses do not count in the GPA, the WU grade does count toward the limit of 2 attempts for a developmental course.

The official Mathematics Department policy is that two latenesses (this includes arriving late or leaving early) is equivalent to one absence.

Every withdrawal (official or unofficial) can affect a student's financial aid status, because withdrawal from a course will change the number of credits or equated credits that are counted toward financial aid.

New York City College of Technology Policy on Academic Integrity

Students and all others who work with information, ideas, texts, images, music, inventions, and other intellectual property owe their audience and sources accuracy and honesty in using, crediting, and citing sources. As a community of intellectual and professional workers, the College recognizes its responsibility for providing instruction in information literacy and academic integrity, offering models of good practice, and responding vigilantly and appropriately to infractions of academic integrity. Accordingly, academic dishonesty is prohibited in The City University of New York and at New York City College of Technology and is punishable by penalties, including failing grades, suspension, and expulsion. The complete text of the College policy on Academic Integrity may be found in the catalog.

MAT 1275 College Algebra and Trigonometry

Text: McGraw-Hill Custom Textbook containing material from Intermediate Algebra, 3rd ed., by Miller, O'Neill and Hyde (sessions 1-16 and 26-29) and Trigonometry, 2nd ed. by Coburn (sessions 18-25).

Session	Topic	Chapter, Section, and Pages	Homework
1	Properties of Integer Exponents Adding and Subtracting Rational Expressions	Chapter 4, Section 4.1, pages 314-318 Chapter 5, Section 5.3, pages 431-438	p. 321: 11-29(odd),33,35,41,47,63,67,75 p.439: 7-23, 27-49 odd
2	Complex Fractions	Chapter 5, Section 5.4, pages 441-446	p.447: 9-15,17-23 odd, 31,33
3	Fractional Equations	Chapter 5, Section 5.5 pages 449-455	p.445: 9- 33 odd
4	Roots and Radicals Rational Exponents	Chapter 6, Section 6.1, pages 492-498 Chapter 6, Section 6.2, pages 503-507	p. 500: 9-37 (odd),59,65,67,79 p. 508: 11,15,19,25,29,33,41, 45,53,65,73,81,93
5	Simplifying Radical Expressions Addition and Subtraction of Radicals	Chapter 6, Section 6.3, pages 510-514 Chapter 6, Section 6.4, pages 517-519	p. 515: 9,13,17,21,25,33,39,55,59,63,79 p. 520: 15,19,23,35,37,41,51,55,57,61,79
6	Multiplication of Radicals	Chapter 6, Section 6.5, pages 522-526	p. 528: 11,17,19,21,23,25,29,31,35,37,55,57,61,63, 67,77,79,87
7	Division of Radicals and Rationalization	Chapter 6, Section 6.6, pages 536-537 (skip examples 4 and 6)	p. 538: 11,13,17,21,31,35,39,53,57,63,67,71,77,81
8	Solving Radical Equations	Chapter 6, Section 6.7, pages 540-543	p. 547: 11-16,21-24,37-42
9	Administer First Examination Complex Numbers	Chapter 6, Section 6.8, pages 550-557	p. 558: 15-27,31-35,53-57,61-69,81-89 odd
10	Quadratic Equations The Square Root Property and Completing the Square	Chapter 4, Section 4.8 pages 388-390 (omit example 2) Chapter 7, Section 7.1, pages 574-579	p. 398: 17-36 all p. 580-581: 3-17,21-27,31-53 odd
11	The Quadratic Formula	Chapter 7, Section 7.2, pages 583-585,588- 594 (Derive the quadratic formula)	p. 595: 9-25,39-55 odd, 69,73,77,81,85
12	Applications of Quadratic Equations	Chapter 4, Section 4.8, pages 392-394 Chapter 7, Section 7.2, page 586	p. 398: 61,65,67,69,71 p. 595: 41,43,47
13	Graphs of Quadratic Functions	Chapter 7, Section 7.4, pages 604-612 Chapter 7, Section 7.5, pages 618-621	p. 613: 11-15,19-23,29-35, 45,47,51-61 odd p. 624: 17-23 odd, 29,31,37,41,43
14	Distance Formula, Midpoint and Circles Perpendicular Bisector	Chapter 9, Section 9.1, pages 746-751	p. 751: 5,9,11,13,23-31 odd, 39,41,45,59,61,63,67,71 Supplemental Problems on Perpendicular Bisector

Session	Topic	Chapter, Section, and Pages	Homework
15	Systems of three Linear Equations in Three Variables	Chapter 3, Section 3.6, pages 278-285.	p. 286: 11-17 odd, 21, 23, 27, 33-37 odd
16	Determinants and Cramer's Rule (optional) Systems involving Nonlinear Equations	Appendix A.1, pages A-1 to A-9. Chapter 9, Section 9.4, pages 776-780.	p. A-10: 35-45 odd, 49, 55, 57. p. 782: 23-37 odd, 49
17	Midterm Examination		1 session
18	Angle Measure and Special Triangles The Trigonometry of Right Triangles	Chapter 1, Section 1.1, pages 2-6 Chapter 2, Section 2.1, pages 46-50	p. 7: 45-57 odd p. 51: 7-21 odd
19	Solving Right Triangles Applications of Static Trigonometry	Chapter 2, Section 2.2, pages 54-56 Chapter 2, Section 2.3, pages 63-66	p. 57: 7-47 odd p. 69: 35-38 all
20	Angle Measure in Radian Trigonometry and the Coordinate Plane	Chapter 3, Section 3.1, pages 90-93 Chapter 1, Section 1.3, pages 22-27	p. 95: 25-39 odd, 43, 45, 49-61 odd, 67-71 odd p. 28: 25-31 odd, 45, 47, 55-63 odd, 64, 73-79 odd
21	Unit Circles	Chapter 3, Section 3.3, pages 108-113	p. 115: 29-35 odd, 37-40 all
22	Graphs of the Sine and Cosine Functions Graphs of Tangent and Cotangent Functions (optional)	Chapter 4, Section 4.1, pages 134-144 Chapter 4, Section 4.2, pages 153-159	p. 145: 1 – 3 all, 17-29 odd, 33-39 odd p. 160: 15,19,21,39,43,47
23	Fundamental Identities and Families of Identities	Chapter 1, Section 1.4, pages 31-35 Chapter 5, Section 5.1, pages 212-214	p. 35: 11-37 odd p. 216: 13-29 odd,37,43,51
24	Trigonometric Equations	Chapter 6, Section 6.3, pages 284-290	p. 292: 13,17,21,25,31,35,43-49 odd, 79, 80
25	Oblique Triangles and the Law of Sines The Law of Cosines	Chapter 7, Section 7.1, pages 316-322 Chapter 7, Section 7.2, pages 329-332	p. 324: 7-23 odd p. 338: 7-11 odd, 21-29 odd
26	Third Examination Exponential Functions	Chapter 8, Subsections 8.3.1, 8.3.2, 8.3.4.	p. 678: 9-25 odd, 43, 49
27	Logarithmic Functions	Chapter 8, Section 8.4, pages 682-685 and example 8, 9.	p. 690: 11-61 odd
28	Properties of Logarithms Compound Interest	Chapter 8, Section 8.5, pages 696-700. Chapter 8, Section 8.6, pages 704-707 (omit example 3).	p. 701: 17-29 odd, 45-55 odd, 63-69, 77, 79, 89 p. 712: 11, 13
29	Exponential Equations	Chapter 8, Section 8.7, pages 721-726.	p. 726: 39-49 odd, 55- 61 odd, 73, 75, 77, 79, 85
30	Final Examination		1 session