

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 Intermediate Algebra, 3rd edition by Julie Miller, Molly O'Neill, and Nancy Hyde and Trigonometry, 2nd 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 |