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**Syllabus With Links to Videos**

**MAT 1275**College Algebra and Trigonometry

**Text:**McGraw-Hill Custom Textbook containing material from Intermediate Algebra**,**5th ed., by Miller, O’Neill, and Hyde (Sessions 1-16 and 26-29) and Trigonometry, 2nd ed., by Coburn (Sessions 18-25).

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| **Class** | **Topic** | **Section** | **Homework/ WeBWorK Problems** | **Video Resource** | **Desmos Interactive activities**  **(Instructor Resource)** |
| 1 | Properties of Integer Exponents    Addition and Subtraction of Rational Expressions | Section 4.1, p.320-324    Section 5.3, p.437-444 | p.327: 11-29 odd, 33, 35, 41, 47, 63, 67, 75  p.445: 7-23, 27-49 odd  IntegerExponents  ReducingRationalExpressions  AddRationalExpressions  AddRationalExpressions2 | [Adding and Subtracting Rational Expressions](https://openlab.citytech.cuny.edu/math1275videolibrary/adding-and-subtracting-rational-expressions/)    [Multiplying and Dividing Rational Expressions (review)](https://openlab.citytech.cuny.edu/math1275videolibrary/multiplying-and-dividing-rational-expressions-for-review/) |  | |
| 2 | Complex Fractions | Section 5.4, p.447-452 | p.452: 9-15,17-23 odd, 31,33  ComplexFractions-Method1  ComplexFractions-Method2 | [Nested Fractions](https://openlab.citytech.cuny.edu/math1275videolibrary/nested-or-complex-fractions/) |  | |
| 3 | Solving Rational Equations | Section 5.5, p.454-460 | p.460: 9-33 odd  FractionalEquations | [Solving Rational Equations](https://openlab.citytech.cuny.edu/math1275videolibrary/solving-rational-equations/) |  | |
| 4 | Roots | Section 6.1, p.496-502    Section 6.2, p.508-512 | p.505: 9-37 odd, 59, 65, 67, 79  p.513: 9, 13, 17, 19, 25, 29, 33, 41, 45, 53, 65, 73, 81, 93  HigherRoots  HigherRoots-Algebraic  RationalExponents | [Introduction to Rational Exponents and Radicals](https://openlab.citytech.cuny.edu/math1275videolibrary/introduction-to-rational-exponents-and-radicals/) |  | |
| 5 | Simplifying Radical Expressions  Addition and Subtraction of Radicals | Section 6.3, p.515-519  Section 6.4, p.522-525 | p.520: 9, 13, 17, 21, 25, 33, 39, 55, 59, 63, 79  p.526: 15, 19, 23, 35, 37, 41, 51, 55, 57, 61, 81  SimplifyingRadicals  AddSubtractRadicals | [Roots and Radicals—Simplifying Radical Expressions I (review)](https://openlab.citytech.cuny.edu/math1275videolibrary/roots-and-radicals-simplifying-radical-expressions/)  [Adding and Subtracting Radical Expressions](https://openlab.citytech.cuny.edu/math1275videolibrary/adding-and-subtracting-radical-expressions/) |  | |
| 6 | Multiplication of Radicals | Section 6.5, p.528-532 | p.534: 11, 17, 19, 21, 23, 25, 29, 31, 35, 37, 55, 57, 61, 63, 67, 77, 79, 87  MultiplyRadicals | [Multiplication of Radicals](https://openlab.citytech.cuny.edu/math1275videolibrary/simplifying-rational-exponents-and-radicals-ii/) | <https://teacher.desmos.com/activitybuilder/custom/5b1e69db0abfa712d3c039f8>  (This is one activity that includes multiplication and division. You can split it in two pieces if you would like to) | |
| 7 | Division of Radicals and Rationalization | Section 6.6, p.536-543  (skip Ex. 4 and 6) | p.544: 11, 13, 17, 21, 31, 35, 39, 53, 57, 63, 67, 71, 77, 81 | [Division of Radicals and Rationalization](https://openlab.citytech.cuny.edu/math1275videolibrary/division-of-radicals-and-rationalization/) | <https://teacher.desmos.com/activitybuilder/custom/5b1e69db0abfa712d3c039f8>  (If you want to do it on this section fully you can do so as well)  (Only suggestion) | |
| 8 | Solving Radical Equations | Section 6.7, p.546-549 | p.554: 13-18, 25-28, 41-46  RadicalEquations | [Solving Radical Equations](https://openlab.citytech.cuny.edu/math1275videolibrary/solving-equations-with-rational-exponents-and-radicals/) |  | |
| 9 | **First Examination**  Complex Numbers | Section 6.8, p.557-563 | p.564: 15-27, 31-35, 53-57, 61-69, 81-89 odd  ComplexNumbers | [Complex Numbers](https://openlab.citytech.cuny.edu/math1275videolibrary/complex-numbers/) | <https://screencast-o-matic.com/watch/cbnVYfQRK8>  (LM)  STEM Appl. of Complex numbers and sinusoids in Circuits.(Optional here or trig)  <http://screencast-o-matic.com/watch/cbnQf06h1i>  (Videos by: Lucie Mingla) | |
| 10 | Solving Equations by Using the Zero Product Rule  Square Root Property and Completing the Square | Section 4.8 p.394-396 (skip Ex. 2)  Section 7.1, p.582-587 | p.404: 21-40    p.589: 3-19, 27-33, 37-53 odd  SquareRootProperty | [Factoring and the Zero Product Rule (review)](https://openlab.citytech.cuny.edu/math1275videolibrary/solving-quadratic-equations-by-factoring/)  [Square Root Property](https://openlab.citytech.cuny.edu/math1275videolibrary/the-square-root-property/)  [Completing the Square](https://openlab.citytech.cuny.edu/math1275videolibrary/completing-the-square/) | <https://teacher.desmos.com/activitybuilder/custom/5b2171d71967330b5e841a19>  (Lucie Mingla)  <https://screencast-o-matic.com/watch/cbVvoaQPZ4>  (Video by Lucie Mingla) | |
| 11 | Quadratic Formula | Section 7.2, p.592-594, 596-602  (Derive the quadratic formula) | p.603: 9-25, 49-55 odd, 69, 73, 77, 81, 85  QuadraticFormula | [Quadratic Formula](https://openlab.citytech.cuny.edu/math1275videolibrary/the-quadratic-formula/) |  | |
| 12 | Applications of Quadratic Equations | Section 4.8, p.398-400  Section 7.2, p.594-595 | p.405: 65, 69, 71, 73, 75  p.603: 39-47 odd | [Applications of Quadratic Equations](https://openlab.citytech.cuny.edu/math1275videolibrary/applications-of-the-quadratic-formula/) | <https://teacher.desmos.com/activitybuilder/custom/56e0b6af0133822106a0bed1>  (Mélanie Boucher French) | |
| 13 | Graphs of Quadratic Functions | Section 7.4, p.612-620    Section 7.5, p.626-630 | p.621: 11-15, 19-23, 29-35, 45, 47, 51-61 odd  p.633: 17-23 odd, 29, 31, 37, 41, 43  ShiftingParabolas  ParabolaVertices  ParabolaVertices-CtS  ParabolaVertices-VertexFormula | [Graphing Quadratic Functions](https://openlab.citytech.cuny.edu/math1275videolibrary/graphs-of-quadratic-functions/) | <https://teacher.desmos.com/activitybuilder/custom/5b1e69831beeef11c1a02941>  (Lucie Mingla)  <https://teacher.desmos.com/activitybuilder/custom/5605bb6200701ed10fb0931a>  (Mélanie Boucher French) | |
| 14 | Distance Formula, Midpoint Formula, and Circles  Perpendicular Bisector | Section 9.1, p.754-759 | p.760: 5, 9, 11, 13, 23-31 odd, 39, 41, 45, 61, 63, 65, 69, 75    Supplemental Problems on Perpendicular Bisector  DistanceFormula  Circles | [Pythagorean Theorem (review!)](https://openlab.citytech.cuny.edu/math1275videolibrary/pythagorean-theorem-review/)  [Distance Formula](https://openlab.citytech.cuny.edu/math1275videolibrary/distance-formula/)  [Midpoint Formula](https://openlab.citytech.cuny.edu/math1275videolibrary/midpoint-formula/)  [Circles](https://openlab.citytech.cuny.edu/math1275videolibrary/circles/)  [Perpendicular Bisectors](https://openlab.citytech.cuny.edu/math1275videolibrary/perpendicular-bisectors/) | <https://teacher.desmos.com/activitybuilder/custom/5b213b2cfac3430d387b0ec5> | |
| 15 | Systems of Linear Equations in Three Variables | Section 3.6, p.283-289 | p.290: 11-17 odd, 21, 23, 27, 35-39 odd  3×3-Systems | [Linear Systems of Three Variables](https://openlab.citytech.cuny.edu/math1275videolibrary/systems-of-three-linear-equations-and-three-variables/) |  | |
| 16 | Determinants and Cramer’s Rule (optional)  Nonlinear Systems of Equations in Two Variables | Appendix A.1, p. A-1 to A-9  Section 9.4, p. 784-788 | p.A-10: 35-45 odd, 49, 55, 57  p.790:  23-37 odd, 49  NonLinearSystems | [Determinants and Cramer’s Rule](https://openlab.citytech.cuny.edu/math1275videolibrary/determinants-and-cramers-rule/)  [Nonlinear Systems of Equations](https://openlab.citytech.cuny.edu/math1275videolibrary/systems-involving-nonlinear-equations/) |  | |
| 17 | **Midterm Examination** |  |  |  |  | |
| 18 | Angle Measure and Special Triangles  The Trigonometry of Right Triangles | Section 1.1, p.2-6    Section 2.1, p.46-50 | p.7:  45-57 odd    p.51: 7-21 odd  SpecialTriangles  TrigonometryRatios | [Trigonometry of Right Triangles](https://openlab.citytech.cuny.edu/math1275videolibrary/trigonometry-of-right-triangles/)  [Special Triangles](https://openlab.citytech.cuny.edu/math1275videolibrary/special-triangles/) |  | |
| 19 | Solving Right Triangles    Applications of Static Trigonometry | Section 2.2, p.54-56  Section 2.3, p.63-66 | p.57: 7-47 odd  p.69: 35-38  SolvingRightTriangles  SolvingRightTriangles-InverseTrig | See videos from lesson 18. |  | |
| 20 | Angle Measure in Radian    Trigonometry and the Coordinate Plane | Section 3.1, p.90-93    Section 1.3, p.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  AngleMeasure-Radians  CoordinatePlaneTrig | [Angle Measure in Radians](https://openlab.citytech.cuny.edu/math1275videolibrary/angle-measure-introduction-to-radians/) |  | |
| 21 | Unit Circle | Section 3.3, p.108-113 | p.115: 29-35 odd, 37-40  UnitCircle | [Unit Circle](https://openlab.citytech.cuny.edu/math1275videolibrary/unit-circle/) |  | |
| 22 | Graphs of the Sine and Cosine Functions Graphs of Tangent and Cotangent Functions (optional) | Section 4.1, p.134-144  Section 4.2, p. 153-159 | p.145: 1-3, 17-29 odd, 33-39 odd  p.160: 15, 19, 21, 39, 43, 47  GraphingSineCosine | [Graphs of Sine, Cosine, and Tangent](https://openlab.citytech.cuny.edu/math1275videolibrary/graphs-of-sine-cosine-and-tangent-functions/) | <https://teacher.desmos.com/activitybuilder/custom/5b01c0bc9e40e60ac0c12c57>  ( Lucie Mingla) | |
| 23 | Fundamental Identities and Families of Identities | Section 1.4, p.31-35  Section 5.1, p.212-214 | p.35: 11-37 odd    p.216: 13-29 odd, 37, 43, 51 | [Pythagorean Identity (The Fundamental Identity of Trigonometry)](https://openlab.citytech.cuny.edu/math1275videolibrary/pythagorean-identity-the-fundamental-trigonometric-identity/) |  | |
| 24 | Trigonometric Equations | Section 6.3, p.284-290 | p.292: 13, 17, 21, 25, 31, 35, 43-49 odd, 79, 80  TrigEquations | [(Basic) Trigonometric Equations](https://openlab.citytech.cuny.edu/math1275videolibrary/basic-trigonometric-equations/) |  | |
| 25 | Oblique Triangles and the Law of Sines  The Law of Cosines | Section 7.1, p.316-322  Section 7.2, p.329-332 | p.324: 7-23 odd    p.338: 7-11 odd, 21-29 odd  LawOfSines  LawOfCosines | [Law of Sines](https://openlab.citytech.cuny.edu/math1275videolibrary/law-of-sines/)  [Law of Cosines](https://openlab.citytech.cuny.edu/math1275videolibrary/law-of-cosines/) |  | |
| 26 | **Third Examination**  Exponential Functions | Subsections 8.3.1, 8.3.2, 8.3.4., p.680-686 | p.687: 9-25 odd, 43, 49  ExponentialFunctions | [Exponential Functions](https://openlab.citytech.cuny.edu/math1275videolibrary/exponential-functions/) |  | |
| 27 | Logarithmic Functions | Section 8.4, p.690-693 and Ex. 8, 9 | p.699: 11-61 odd  LogarithmicFunctions | [Logarithmic Functions](https://openlab.citytech.cuny.edu/math1275videolibrary/logarithmic-functions/) |  | |
| 28 | Properties of Logarithms    Compound Interest | Section 8.5, p. 704-709    Section 8.6, p.712-715 (skip Ex. 3) | p.710: 17-29 odd, 45-55 odd, 63-64, 67-71, 79, 81, 91  p.721: 11, 13  LogarithmicProperties  CompoundInterest | [Properties of Logarithms](https://openlab.citytech.cuny.edu/math1275videolibrary/properties-of-logarithms/)  [Compound Interest](https://openlab.citytech.cuny.edu/math1275videolibrary/compound-interest/) |  | |
| 29 | Logarithmic and Exponential Equations | Section 8.7, p.726-734 | p.735: 39-49 odd, 55-61 odd, 73, 75, 77, 79, 87  ExponentialEquations  ExponentialEquations-Calc | [Exponential Equations](https://openlab.citytech.cuny.edu/math1275videolibrary/exponential-equations/) | <https://teacher.desmos.com/activitybuilder/custom/5b2144e28648c60af0bb8068>  (by Dan Meyer)  (Adapted by Lucie Mingla) | |
| 30 | **Final Examination** |  |  | [Selected final exam review questions](https://www.youtube.com/playlist?list=PLutj_7uIurpn51xePnCtTNVC_QNz9vw3n) |  | |

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