

**MPT contains questions** in Algebra which is equivalent to MTH 100 and Pre-Calculus which is equivalent to MTT 101. Below are the topics and resources that you might use.

(Algebra Topics - equivalent to MTH 100)

Basics

- Polynomials
- Factoring Polynomials
- Rational Expressions

Equations and Inequalities

- Linear Functions
- Quadratic Equations
- Complex Numbers; Quadratic Equations in the Complex Number System
- Radical Equations; Equations Quadratic in Form; Factorable Equations
- Solving Inequalities
- Equations and Inequalities Involving Absolute Value

Graphs

- Graphs of Equations in Two Variables; Intercepts
- Lines

Linear and Quadratic Functions

- Quadratic Functions and Their Properties
- Inequalities Involving Quadratic Functions

Polynomial and Rational Functions

- Polynomial and Rational Inequalities

Systems of Equations and Inequalities

- Systems of Linear Equations: Substitution and Elimination
- Partial Fraction Decomposition
- Systems of Inequalities

<u>Functions and Their Graphs</u> <ul style="list-style-type: none"><li>• The Graph of a Function</li><li>• Properties of Functions</li><li>• Library of Functions; Piecewise-defined Functions</li><li>• Graphing Techniques: Transformations</li></ul>
<u>Exponential and Logarithmic Functions</u> <ul style="list-style-type: none"><li>• Composite Functions</li><li>• One-to-One Functions; Inverse Functions</li><li>• Exponential Functions</li><li>• Logarithmic Functions</li><li>• Properties of Logarithms</li><li>• Logarithmic and Exponential Equations</li></ul>
<u>Trigonometric Functions</u> <ul style="list-style-type: none"><li>• Angles and their Measure</li><li>• Right Triangle Trigonometry</li><li>• Trigonometric Functions of General Angles</li><li>• Graphs of the Sine and Cosine Functions</li><li>• Phase Shift; Sinusoidal Curve Fitting</li></ul>
<u>Analytic Trigonometry</u> <ul style="list-style-type: none"><li>• The Inverse Sine, Cosine, and Tangent Functions</li><li>• The Inverse Trigonometric Functions (Continued)</li><li>• Trigonometric Equations</li><li>• Sum and Difference Formulas</li><li>• Double-angle and Half-Angle Formulas</li><li>• Product-to-Sum and Sum-to-Product Formulas</li></ul>
<u>Applications of Trigonometric Functions</u> <ul style="list-style-type: none"><li>• The Law of Sines</li><li>• The Law of Cosines</li><li>• The area of a Triangle</li></ul>

**Textbooks and Resources:**

- Sullivan, Michael. (2016). Algebra and Trigonometry. New York, NY: Pearson.
- Baratto & Bergman. (2013). Hutchison series in Mathematics-Elementary & Intermediate Algebra. New York, NY: McGraw Hill.
- <https://www.khanacademy.org/math/algebra-home>
- <https://www.coolmath.com/>
- <http://www.virtualnerd.com/algebra-1/>
- <https://www.desmos.com/calculator>