

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

**Pre-Algebra Topics - equivalent to MTG 100)**

<p><b>Linear Equations and Inequalities in One Variable</b></p> <ul style="list-style-type: none"> <li>• The addition and Multiplication Properties of Equality</li> <li>• Solving General Linear Equations</li> <li>• More Equations</li> <li>• Formula and Functions</li> <li>• Inequalities</li> <li>• Solving inequalities and Applications</li> </ul> <p><b>Linear Equations in Two Variables and Their Graphs</b></p> <ul style="list-style-type: none"> <li>• Graphing Lines in The Coordinate Plane</li> <li>• Slope</li> <li>• Equations of Lines in Slope-Intercept Form</li> <li>• The Point-Slope Form</li> <li>• Graphing Linear Inequalities in Two Variables</li> </ul>
<p><b>Exponents and Polynomials</b></p> <ul style="list-style-type: none"> <li>• The Rules of Exponents</li> <li>• Negative Exponents</li> <li>• Scientific Notation</li> <li>• Addition and Subtraction of Polynomials</li> <li>• Multiplication of Polynomials</li> <li>• Multiplication of Binomials</li> <li>• Special Products</li> <li>• Division of Polynomials</li> </ul>
<p><b>Factoring</b></p> <ul style="list-style-type: none"> <li>• Factoring Out Common Factor</li> <li>• Special Products and Grouping</li> <li>• Factoring the Trinomial</li> <li>• Difference and Sum of Cubs</li> <li>• Solving Quadratic Equations by Factoring</li> </ul>
<p><b>Rational Expressions</b></p> <ul style="list-style-type: none"> <li>• Reducing Rational Expressions</li> <li>• Multiplication and Division</li> <li>• Finding the Least Common Denominator</li> <li>• Addition and Subtraction</li> <li>• Complex Fraction</li> <li>• Solving Equation With Rational Expressions</li> </ul> <p><b>System of Linear Equations</b></p> <ul style="list-style-type: none"> <li>• The Substitution Method</li> <li>• The Addition Method</li> </ul>
<p><b>More on Inequalities</b></p> <ul style="list-style-type: none"> <li>• Absolut Value Equations and Inequalities</li> <li>• Compound Inequalities in Two Variables</li> </ul> <p><b>Radicals and Rational Exponents</b></p> <ul style="list-style-type: none"> <li>• Solving Equations with Radical and Exponents</li> <li>• Complex Numbers</li> </ul>
<p><b>Quadratic Equations, Functions and Inequalities</b></p> <ul style="list-style-type: none"> <li>• Factoring and Completing the Square</li> <li>• The Quadratic Formula</li> <li>• More on Quadratic Equations</li> <li>• Graphing Quadratic Functions</li> <li>• Quadratic Inequalities</li> </ul>
<p><b>Functions</b></p> <ul style="list-style-type: none"> <li>• Functions and Relations</li> <li>• Combining Functions</li> </ul>

## Pre-Calculus - equivalent to MTT 101

<b>Functions and Their Graphs</b> <ul style="list-style-type: none"><li>• Properties of Functions</li><li>• Library of Functions; Piecewise-Functions</li><li>• Graphing Techniques: Transformations</li></ul>
<b>Exponential and Logarithmic Functions</b> <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>
<b>Trigonometric Functions</b> <ul style="list-style-type: none"><li>• Angles and Their Measure</li><li>• Right Triangle Trigonometry</li><li>• Computing the Values of Trigonometric Functions of Acute Angles</li><li>• Trigonometric Functions of General Angles</li><li>• Graphs of the Sine and Cosine Functions</li><li>• Graphs of the Tangent, Cotangent, Cosecant, and Secant Functions</li><li>• Phase Shift; Sinusoidal Curve Fitting</li></ul>
<b>Analytic Trigonometry</b> <ul style="list-style-type: none"><li>• The Inverse Sine, Cosine, and Tangent Functions</li><li>• Trigonometric Identities</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><li>• Trigonometric Equations</li></ul>
<b>Applications of Trigonometric Functions</b> <ul style="list-style-type: none"><li>• Applications Involving Right Triangles</li><li>• The Law of Sines</li><li>• The Law of Cosines</li><li>• Area of a Triangle</li></ul>
<b>Systems of Equations and Inequalities</b> <ul style="list-style-type: none"><li>• System of Linear Equations: Matrices</li><li>• System of Linear Equations: Determinants</li><li>• Matrix Algebra</li><li>• Partial Fraction Decomposition</li></ul>

### Textbook and Resources

- Sullivan, Algebra and Trigonometry, 2012  
MyMathLab with Pearson eText, Instant Access, for Algebra and Trigonometry, 9/E Sullivan
- College Algebra with Trigonometry Ninth Edition By Barnett, Ziegler, Byleen, and Sobecki
- Precalculus By Demana, Waits, Foley, and Kennedy
- Hutchison series in Mathematics, Elementary and intermediate algebra.(4rd ed.). New York: McGraw Hill, Baratto& Bergman
- Elementary & Intermediate Algebra /Mark Dugopolski, - 4th ed. (2012), Connect Plus with McGraw Hill e-Text, Instant Access, for Elementary & Intermediate Algebra /Mark Dugopolski, - 4th ed