

CONCEPT Refreshers

Fall 2025

Fall 2025 Concept Refreshers				
Concept Refreshers	Time	Date	Livestream (Register)	*Recording
Calc 1	2:30 pm	Tuesday, August 19, 2025	Watch Here	Recording Link
Calc 2	1:30 pm	Tuesday, August 19, 2025	Watch Here	Recording Link
Algebra	4:00 pm	Tuesday, August 19, 2025	Watch Here	Recording Link
Trig	3:30 pm	Tuesday, August 19, 2025	Watch Here	Recording Link
Calc 1 Week 2	11:30 am	Wednesday, August 27, 2025	Watch Here	Recording Link
Calc 2 Week 2	3:00 pm	Wednesday, August 27, 2025	Watch Here	Recording Link
Calc 1				
Calc 2				
Algebra				
Trig				
Calc 1				
Calc 2				

Spring 2025

Spring 2025 Concept Refreshers			
Concept Refreshers	Time	Date	*Recording
Calc 1	3:30 pm	Sunday, January 12, 2025	Recording Link
Calc 2	5:00 pm	Sunday, January 12, 2025	Recording Link
Algebra	3:00 pm	Wednesday, January 15, 2025	Recording Link
Trig	12:00 pm	Thursday, January 16, 2025	Recording Link
Calc 1 Week 2	3:00 pm	Wednesday, January 22, 2025	Recording Link
Calc 2 Week 2	4:30 pm	Wednesday, January 22, 2025	Recording Link

Fall 2024

Fall 2024 Concept Refreshers			
Concept Refreshers	Time	Date	*Recording
Calc 1	11:30am	Tuesday, October 8, 2024	Recording Link
Calc 2	11:00am	Wednesday, October 9, 2024	Recording Link
Algebra	5:30pm	Wednesday, October 16, 2024	Recording Link
Trig	6:00pm	Thursday, October 17, 2024	Recording Link
Calc 1	10:00am	Tuesday August 20, 2024	Recording Link
Calc 2	11:30am	Tuesday, August 20, 2024	Recording Link
Algebra	6:30pm	Tuesday, August 20, 2024	Recording Link
Trig	11:00am	Wednesday, August 21, 2024	Recording Link
Calc 1	5:30pm	Wednesday, August 28, 2024	Recording Link
Calc 2	7:00pm	Wednesday, August 28, 2024	Recording Link

Spring 2024

Spring 2024 Concept Refreshers	
Concept Refresher	Recording
Calc 1	Recording Link
Calc 2	Recording Link
Algebra	Recording Link
Trig	Recording Link
Calc 1 Week 2	Recording Link
Calc 2 Week 2	Recording Link
Calc 1 B Session	Recording Link
Calc 2 B Session	Recording Link

Math Mini-Concept Refreshers

Click your course to navigate to a list of videos.

MAT 117 Mini Concept Refreshers

[MAT 117 Longer Concept Videos](#)

MAT 114 Mini Concept Refreshers

[MAT 114 Longer Concept Videos](#)

MAT 210 Mini Concept Refreshers

[MAT 210 Longer Concept Videos](#)

MAT 211 Mini Concept Refreshers

[MAT 211 Longer Concept Videos](#)

MAT 265 Mini Concept Refreshers

[MAT 265 Longer Concept Videos](#)

MAT 266 Mini Concept Refreshers

[MAT 266 Longer Concept Videos](#)

MAT 267 Mini Concept Refreshers

[MAT 267 Longer Concept Videos](#)

MAT 275 Mini Concept Refreshers

[MAT 275 Longer Concept Videos](#)

MAT 243 Mini Concept Refreshers

MAT 242/343 Mini Concept Refreshers

MAT 114

Sets

- Set operations
- Venn Diagrams
- Fundamental Counting Principle
- Permutations and Combinations

Probability

- Basic Probability
- Probability Rules
 - [Conditional Probability](#)
 - [Independent Events](#)
 - [Density Curve](#)
- Expected Value
- [Conditional Probability](#)

Statistics

- Data organization and visualization
- Measures of Central tendency
- Measures of Dispersion
- Normal distribution
 - [Z scores](#)
 - [Areas under the Standard Normal Curve](#)
 - [Working with normally distributed variables](#)

Finance

- Simple Interest
- Compound Interest
- Annuities
- Amortized Loans

Dimensional Analysis

Geometry

- Perimeter
- Area
- Volume
- Surface Area
- Triangles
- Right Triangle Trigonometry

MAT 114 Longer Concept Videos

- [Compound Interest](#)
- [Amortized Loans](#)
- [Dimensional Analysis](#)
- [Perimeter and Area](#)
- [Volume and Surface Area](#)
- [Triangles](#)
- [Right Triangle Trigonometry](#)
- [Probability](#)
- [Conditional Probability and Expected Value](#)
- [Measures of Central Tendency](#)
- [Normal Distribution](#)
- [Simple and Compound Interest](#)
- [Annuities and Amortized Loans](#)

- [Perimeter Area and Volume Surface Area](#)

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MAT 117

Rules of Exponents

Factoring

- Use the Distributive Property to factor out monomial factors
- Factor quadratic trinomial
- Simplify complex fractions

[Definitions of Functions](#)

[Linear Functions](#)

[Solving Basic Equations](#)

- Solving a linear equation with several occurrences of the variable
- Solving word problem involving linear equations (including mixture problem).
- Graphing equation of Linear Equations a straight line.
- Finding and interpreting the slope and initial value in a real world problem modeled by a straight line.
- Writing an equation for a straight line and/or secant line given the slope and a point or two points.
- Finding the average rate of change from equation, graph, and word problem.
- Finding the inverse function for a given linear relationship.

Rational Expressions

- Solve equations involving radical expressions.
- Evaluating rational expressions at a given value of the variable

[Systems of equations Introduction](#)

- [Systems of Equations Word Problem 1](#)
- [Systems of equations Word problem 2](#)
- [Solving Systems of 3 Equations](#)

[Domain and Range Basic Functions](#)

[Evaluating Functions](#)

[Domain and Range of Rational Functions](#)

Transformations

- Graph absolute value and polynomial equations using the vertical and horizontal shifting, reflection over an axis and vertical stretching/compression.
- Determine symmetry with respect to the x-axis, y-axis and the origin

Quadratic Functions

- [Solving quadratic equations](#)
- Solving word problems modelled by quadratic functions (use of Max/Min)
- Use graphing calculator to find zeros, intercepts and max/min
- Writing the equation of a quadratic function
 - Both in general and standard forms
 - Given its graph

Polynomial Functions

- Roots
 - Finding zeros and their multiplicities given polynomials in factored form
 - Finding a polynomial function given its zeros
- Polynomial division

- Synthetic division and the Factor theorem
- Dividing by a monomial or binomial
- Use graphing calculator to find extrema and solve word problems
- Determine end behavior of polynomial function.
 - Determine whether functions are Odd or Even.

Rational Functions

- Inverses of Functions
- Asymptotes
- Domain and range of a function
- Properties of rational functions
- Graphing rational functions

Exponential Functions

- Graphs of Exponential Functions
- Properties of Exponential Functions
- Modeling Analytical Exponential Functions
- Exponential growth/decay

Logarithmic Functions

- Convert between exponential and log forms
- Graphs of Logarithmic Functions
- Properties of Logarithmic Functions
- Applications of Logarithmic Functions

MAT 117 Longer Concept Videos

- [Graphs of Logarithmic Functions](#)
- [Rational Functions](#)
- [Graphs of Exponential Functions](#)
- [Properties of Exponential Functions](#)
- [Properties of Logarithmic Functions](#)
- [Applications of Logarithmic Functions](#)
- [Factoring and Exponents](#)
- [Functions](#)
- [Rational Functions](#)
- [Finding Roots of Polynomials](#)
- [Modeling Analytical Exponential Functions](#)

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MAT 210

Limits

- Numerical and Graphical viewpoints
- Continuity
- Continuity: algebraic approach

Average Rate of Change

Derivatives

- Numerical and Graphical Viewpoints
- Algebraic Viewpoint
- Derivatives of Powers, Sums, and Constant Multiples

- Marginal Analysis
- The Product Rule
- The Quotient Rule
- The Chain Rule
- Derivatives of Logarithmic Functions
- Derivatives of Exponential Functions
- Implicit Differentiation

Maxima and Minima

- Applications of Maxima and Minima

Higher order Derivatives

- Acceleration
- Concavity

Analyzing Graphs

Related Rates

Elasticity

Integration

- The Indefinite Integral
- Substitution
- The Definite Integral: Numerical and Graphical Viewpoints
- The Definite Integral: Algebraic Viewpoint and the Fundamental Theorem of Calculus
- Integration by Parts
- Area between Two curves and applications
- Averages and Moving averages
- Applications to Business and Economics: Consumers' and Producers' Surplus
- Improper Integrals

MAT 210 Longer Concept Videos

- [Definite Integral & Left Riemann Sum](#)
- [Fundamental Theorem of Calculus](#)
- [Integration by Parts](#)
- [Area Between Curves & Average Value](#)
- [Consumer and Producer Surplus](#)
- [Improper Integrals](#)
- [Viewers' Choice](#)
- [Chain Rule](#)
- [Implicit Differentiation](#)
- [Max and Min](#)
- [Related Rates and Elasticity](#)
- [Indefinite integrals and U-sub](#)
- [Definite Integrals pt. 2](#)
- [Integration by Parts and Area Between Curves](#)

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MAT 211

Linear Programming

Optimization

- Partial derivatives
- Maxima and Minima
- Constrained Optimization: Substitution and Lagrange

Matrices

- [Gaussian Elimination and Back Substitution](#)
- [Matrix operations - Addition and Multiplication](#)
- [Gauss-jordan Row Reduction](#)
- [Matrix Inversion](#)
- [Determinants](#)
- Cramer's Rule

Counting Methods

- Addition and multiplication Principles

Probability

- Probability distribution
- [Binomial Distribution](#)
- Probability and Counting Techniques
- [Conditional Probability](#)
- [Independence](#)
- [Bayes' Theorem](#)

Random Variables

- Discrete
- Continuous

[Binomial Distribution](#)

Measures of central tendency

Measures of Dispersion

- Variance and standard deviation

Normal Distribution

- [Z scores](#)
- [Area under standard normal distribution](#)
- [Working with normally distributed variables](#)

MAT 211 Longer Concept Videos

- [Conditional Probability & Bayes Theorem](#)
- [Bayes Theorem & Discrete Random Variables](#)
- [Measures of Central Tendency](#)
- [Measures of Dispersion](#)
- [Continuous Random Variables & Probability Density Functions](#)
- [Normal Distribution](#)
- [Mean, Variance, and Standard Deviation](#)
- [Viewers' Choice](#)
- [Max and Min](#)
- [Constrained Optimization and EVT](#)
- [Matrices](#)
- [Gauss-Jordan](#)

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MAT 265

Limits

- Numerically
- One-sided
- Algebraically

Continuity

- Limits at infinity
- Asymptotes

Derivatives

- Rate of Change
- Derivative as a Function
- Power Rule
- Product Rule
- Quotient Rule
- Chain Rule
- Implicit Differentiation
- Related Rates
- Linear Approximation
- Differentials
- Derivatives of Exponential Functions
- Derivatives of Logarithmic Functions

Exponential Functions

Inverse Functions

Logarithms

Inverse Trigonometric Functions

Indeterminate Forms

L'Hôpital's Rule

Optimization

- Max and Min Values
- Optimization Problems

Mean Value Theorem

Derivatives and the Shapes of Graphs

Curve Sketching

Antiderivatives

- Area Under the Curve
- Riemann Sums
- The Definite Integral
- Evaluating Definite Integrals
- The Fundamental Theorem of Calculus
- Applications of Fundamental Theorem of Calculus

MAT 265 Longer Concept Videos

- [Optimization](#)
- [Intro to Antiderivatives](#)
- [Areas and Distances](#)
- [The Definite Integral](#)
- [Evaluating Definite Integrals](#)
- [Area Under the Curve](#)
- [The Fundamental Theorem of Calculus](#)
- [Derivatives as a Function and Power Rule](#)
- [Implicit Differentiation, Related rates, and Differentials](#)
- [Derivatives of Exponential and Logarithmic Functions](#)
- [Max and Min Values; Mean Value Theorem](#)
- [Curve Sketching and Optimization](#)
- [Definite Integrals](#)

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MAT 266

Integration

- [Substitution](#)
- [Integration by Parts](#)
- [Trigonometric Integrals and Substitutions](#)
- [Partial Fractions](#)
- Integration with Tables & CAS
- [Numerical Integration](#)
- [Improper Integrals](#)

Applications of Integration

- [Area Between Curves](#)
- Volumes
 - [Slicing, Disks, and Washers](#)
 - [Shells](#)
- [Arc Length](#)
- [Work](#)

Series

- Convergence Tests
- Power Series
- Representing Functions as Power Series
- Taylor Series
- Maclaurin Series

Parametric Curves

Calculus with Parametric Curves

Polar Curves

Tangents to Polar Curves

Polar Coordinates

- Areas and Lengths in Polar Coordinates

MAT 266 Longer Concept Videos

- [Representing Functions as Power Series](#)
- [Taylor and Maclaurin Series](#)
- [Parametric Curves](#)
- [Calculus with Parametric Curves](#)
- [Polar Curves & Tangents to Polar Curves](#)
- [Areas and Lengths in Polar Coordinates](#)
- [Substitution and Integration by Parts](#)
- [Areas Between Curves and Volumes](#)
- [Shell Volume, Arc Length, and Work](#)
- [Power Series](#)
- [Power, Taylor, and Maclaurin Series](#)
- [Parametric Equations](#)

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MAT267

3D coordinate systems

Vectors

- Vector components, addition, and subtraction
- The Dot Product
- The Cross Product

Equations of Lines

Equations of Planes

Vector Equations

Space Curves

Arc Length

Curvature

Functions of Several Variables

Partial Derivatives

Tangent Planes

Linear Approximations

Directional Derivatives & the gradient vector

Maximum and minimum values

Double Integrals

- Over rectangles
- Over general regions
- In polar coordinates

Triple Integrals

- Triple integrals in rectangular coordinates
- Triple integrals in cylindrical coordinates
- Triple integrals in spherical coordinates

Vector Fields

Line Integrals

- Calculating line integrals
- The Fundamental Theorem for Line Integrals

Green's Theorem

Curl

Divergence

Parametric Surfaces & their Areas

Surface Integrals

MAT 267 Longer Concept Videos

- [Fundamental Theorem of Line Integrals](#)
- [Green's Theorem](#)
- [Curl and Divergence](#)
- [Parametric Surfaces and their Areas](#)
- [Surface Integrals](#)
- [Arc Length and Curvature](#)
- [Partial Derivatives, linear approximation](#)
- [Partial Derivatives, Tangent Planes](#)
- [Gradients, Directional Derivative](#)
- [Double Integrals](#)
- [Double Integrals in Polar Coordinates and Triple Integrals](#)
- [Spherical Coordinates](#)
- [Line Integrals](#)
- [More Line Integrals](#)

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MAT 275

Numerical Approach

- Slope field
- Solution Curves

Analytic Approach

- Separable Equations
- Applications of Separable Equations

Linear Differential Equations

- Linear first-order equations
- Method of integrating factors
- Exact equations
- Difference between linear and nonlinear equations
- Autonomous equations and Population dynamics
- Numerical approximation: Euler's methods

Homogeneous Equations with Constant Coefficients

- The Wronskian
- Solutions of Linear Homogeneous equations

2nd Order Linear equations

- Complex roots of the Characteristic Equation
- Repeated Roots
- Mechanical and Electrical Vibrations
- Method of Undetermined Coefficients
- Forced Vibrations

Laplace Transform

- Definition of the Laplace Transform
- Solution of the Initial Value Problem
- Inverse Transforms

Step Functions

Differential equation with discontinuous forcing functions

Impulse Functions

Linear First Order Systems

- Linear Independence
- Eigenvalues & eigenvectors
- Basic theory of systems of first order equations
- Homogeneous linear systems with constant coefficients
- Complex eigenvalues
- Repeated eigenvalues

MAT 275 Longer Concept Videos

- [ODEs with Discontinuous Forcing Functions](#)
- [Impulse Functions & Review of Linear Algebra](#)
- [Linear Algebraic Equations & Linear Independence](#)
- [Eigenvalues and Eigenvectors](#)
- [Homogeneous Linear Systems with Constant Coefficients](#)
- [Complex Eigenvalues](#)
- [Repeated Eigenvalues](#)
- [Directional Fields, Integrating Factor, and Separation of Variables](#)
- [Separation of variables, Euler's Method, Homogenous Equations with Constant Coefficients, and The Wronskian](#)

- [Complex Roots, Repeated Roots, and Reduction of Order](#)
- [Free and Forced Mechanical Vibration](#)
- [Forced Vibrations and Method of Undetermined Coefficients](#)
- [Solution of the Initial Value Problem and Step Functions](#)
- [Step Functions, Discontinuous Forcing Functions, and Impulse Functions](#)
- [Linear Algebra Review](#)

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MAT 243

- Propositional Logic
 - [Logical Connectors](#)
 - [Logical Equivalence](#)
 - [Converse/Inverse/Contrapositive](#)
- Predicates and Quantifiers
 - [Universal and Existential Quantifier](#)
 - [Nested Quantifiers](#)
- Rules of Inference
- Introduction to Proofs
 - Direct
 - Indirect - Contradiction
 - Indirect - Contrapositive
- Sets
 - Set operations
- Functions
 - Injective and Surjective Functions
 - Image and Preimage
 - Inverse
- Sequences and Summation
 - Arithmetic sequences
 - geometric sequences
 - Recursive Sequence
 - Index Shifting - Summation
 - Sums of Consecutive Terms
- Growth of Functions
- Divisibility and Modular Arithmetic
 - Greatest Common Divisor
 - Euclidean Algorithm
- Representation of Integers
 - Converting decimal to binary
 - Converting between any base
- Mathematical Induction
- Recursive Definition
- Structural Induction
- Linear Recurrence Relations
 - Solving Linear Recurrence Relations
 - Repeated and Complex Zeros
- Basics of Counting
 - Sum and Product Rules
 - Pigeonhole Principle

- Permutations and Combinations
- Inclusion-Exclusion Principle

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MAT 242/343

Matrix Arithmetic

- [Gaussian Elimination and Back Substitution](#)
- [Gauss-Jordan Elimination and RREF](#)
- [Matrix operations - Addition and Multiplication](#)
- [Inverses of Matrices](#)
- [Determinants](#)

Subspaces

- Subspace Definition
- Spanning Sets
- Linear Independence
- Bases and Dimension
 - Change of Basis
 - Coordinates and Coordinate Conversion
- Row Space/Column Space/Null Space
- Fundamental Subspaces

Linear Transformations

Orthogonality

- Inner Products
- Projection and Distance
- Orthogonal Subspaces
- Least Squares
- Orthonormality
 - Gram-Schmidt Process

Eigenvalues

- Eigenvalues and eigenvectors
- Diagonalization

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