Curriculum Guide Algebra 2 Advanced

Unit 1: Equations and Inequalities

Biblical Worldview Essential Questions:
Is your life "balanced" as a believer?
Are you a "real" Christian?

13 Lessons

A2#1, A2#2

Objectives	Methods	Resources	Assessment
The students will 1. Use a number line to graph and order real numbers. 2. Identify properties of and use operations with real numbers. 3. Evaluate algebraic expressions. 4. Simplify algebraic expressions by combining like terms. 5. Solve linear equations. 6. Rewrite equations and formulas. 7. Solve problems using algebraic models. 8. Solve linear inequalities. 9. Solve absolute value equations and inequalities.	• teacher lecture • teacher working examples on the board • student guided practice of problems in book • cooperative learning groups • individual assistance • partner work • worksheets • homework • show related YouTube videos	Holt McDougal Larson Algebra 2 , 2011	• check homework • Quizzes • Mid-Chapter Test • Free-Response Chapter test • Oral response • Board work

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Unit 2: Linear Equations and Functions

Biblical Worldview Essential Question:
Does the evidence in your life show a "relation" to Christ or the world?

17 Lessons

A2#2

Objectives	Methods	Resources	Assessment
The students will 1. Graph and evaluate linear functions. 2. Calculate slope and rate of change of linear functions. 3. Graph linear functions. 4. Write equations of lines. 5. Solve linear inequalities in two variables. 6. Graph and evaluate piecewise defined functions. 7. Graph and evaluate absolute value functions.	• teacher lecture • teacher working examples on the board • student guided practice of problems in book • cooperative learning groups • individual assistance • partner work • worksheets • homework • show related YouTube videos	Holt McDougal Larson Algebra 2 , 2011	• check homework • Quizzes • Mid-Chapter Test • Free-Response Chapter test • Oral response • Board work

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Unit 3a: Systems of Linear Equations and Inequalities

Biblical Worldview Essential Question:
What happens when you have too many "variables" in your life?

12 Lessons

A2#1, A2#3

Objectives	Methods	Resources	Assessment
The students will 1. Solve linear systems by graphing. 2. Solve linear systems algebraically. 3. Graph and solve linear inequalities. 4. Graph linear equations in three variables. 5. Solve linear equations in three variables.	• teacher lecture • teacher working examples on the board • student guided practice of problems in book • cooperative learning groups • individual assistance • partner work • worksheets • homework • show related YouTube videos	Holt McDougal Larson Algebra 2 , 2011	• check homework • Quizzes • Mid-Chapter Test • Free-Response Chapter test • Oral response • Board work

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Unit 3b: Matrices and Matrix Operations *[Optional]*

Biblical Worldview Essential Question:
What does it mean to be "fearfully and wonderfully" made?

12 Lessons

A2#3

Objectives	Methods	Resources	Assessment
The students will 1. Perform matrix operations. 2. Multiply matrices. 3. Evaluate the determinant of a matrix and use determinants to solve a system of linear equations using Cramer's Rule. 4. Define an identity matrix and determine the inverse of a matrix. 5. Solve systems of equations using inverse matrices.	• teacher lecture • teacher working examples on the board • student guided practice of problems in book • cooperative learning groups • individual assistance • partner work • worksheets • homework • show related YouTube videos	Holt McDougal Larson Algebra 2 , 2011	• check homework • Quizzes • Mid-Chapter Test • Free-Response Chapter test • Oral response • Board work

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Unit 4: Quadratic Functions and Factoring

Biblical Worldview Essential Question:
What are the "factors" of the gospel message?

22 Lessons

A2#2, A2#5

Objectives	Methods	Resources	Assessment
The students will 1. Graph quadratic functions. 2. Solve quadratic equations by factoring. 3. Solve quadratic functions by completing the square. 4. Define and use complex numbers. 5. Use the quadratic formula and the discriminant. 6. Graph and solve quadratic inequalities.	• teacher lecture • teacher working examples on the board • student guided practice of problems in book • cooperative learning groups • individual assistance • partner work • worksheets • homework • show related YouTube videos	Holt McDougal Larson Algebra 2 , 2011	• check homework • Quizzes • Mid-Chapter Test • Free-Response Chapter test • Oral response • Board work

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Unit 5: Polynomials and Polynomial Functions

Biblical Worldview Essential Question:
What are the "many terms" of the Mosaic Law?

12 Lessons

A2#4

Objectives	Methods	Resources	Assessment
The students will 1. Simplify expressions involving powers. 2. Evaluate and graph polynomial functions. 3. Add, subtract and multiply polynomial expressions. 4. Factor and solve polynomial equations. *[The objectives below are optional]* 5. Use remainder and factor theorems to evaluate polynomials. 6. Find rational zeros of polynomial functions. 7. Use the Fundamental Theorem of Algebra. 8. Analyze graphs of polynomial functions.	• teacher lecture • teacher working examples on the board • student guided practice of problems in book • cooperative learning groups • individual assistance • partner work • worksheets • homework • show related YouTube videos	Holt McDougal Larson Algebra 2 , 2011	• check homework • Quizzes • Mid-Chapter Test • Free-Response Chapter test • Oral response • Board work

Unit 6: Rational Exponents and Radical Functions

Biblical Worldview Essential Question:
What are "rational arguments" for the creation account in Genesis 1?

18 Lessons

A2#4, A2#7, A2#8

Objectives	Methods	Resources	Assessment
The students will 1. Evaluate nth roots and study rational exponents. 2. Simplify expressions involving rational exponents. 3. Perform operations with functions 4. Find the inverse of a function. 5. Graph square root and cube root functions. 6. Solve radical equations.	• teacher lecture • teacher working examples on the board • student guided practice of problems in book • cooperative learning groups • individual assistance • partner work • worksheets • homework • show related YouTube videos	Holt McDougal Larson Algebra 2 , 2011	• check homework • Quizzes • Mid-Chapter Test • Free-Response Chapter test • Oral response • Board work

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Unit 7: Exponential and Logarithmic Functions

Biblical Worldview Essential Question:
What brings about growth in the church? What brings about decay in the church?

14 Lessons

A2#8, A2#9

Objectives	Methods	Resources	Assessment
The students will 1. Graph and use exponential growth functions. 2. Graph and use exponential decay functions. 3. Study functions involving the natural base *e*. 4. Graph and evaluate logarithmic functions. 5. Rewrite logarithmic expressions. 6. Solve exponential and logarithmic equations. *[optional]*	• teacher lecture • teacher working examples on the board • student guided practice of problems in book • cooperative learning groups • individual assistance • partner work • worksheets • homework • show related YouTube videos	Holt McDougal Larson Algebra 2 , 2011	• check homework • Quizzes • Mid-Chapter Test • Free-Response Chapter test • Oral response • Board work

Unit 8: Rational Equations and Functions [Optional]

Biblical Worldview Essential Question:

What does the Bible mean by "setting your mind on things above, not on things below [earthly things]"? (Col 3:2)

14 Lessons

A2#7

Objectives	Methods	Resources	Assessment
The students will 1. Use inverse variation and joint variation models. 2. Graph and evaluate rational functions. 3. Graph rational functions with higher degree polynomial functions. 4. Multiply and divide rational expressions. 5. Add and subtract rational expressions. 6. Simplify complex fractions. 7. Solve rational equations.	• teacher lecture • teacher working examples on the board • student guided practice of problems in book • cooperative learning groups • individual assistance • partner work • worksheets • homework • show related YouTube videos	Holt McDougal Larson Algebra 2 , 2011	• check homework • Quizzes • Mid-Chapter Test • Free-Response Chapter test • Oral response • Board work

Unit 9: Quadratic Relations and Conic Sections [Optional]

Biblical Worldview Essential Question:
According to Scripture, what things remain constant, and what things change?

12 Lessons

A2#6

Objectives	Methods	Resources	Assessment
The students will 1. Use distance and midpoint formulas. 2. Graph and write equations of parabolas. 3. Graph and write equations of circles. 4. Graph and write equations of ellipses. 5. Graph and write equations of hyperbolas.	• teacher lecture • teacher working examples on the board • student guided practice of problems in book • cooperative learning groups • individual assistance • partner work • worksheets • homework • show related YouTube videos	Holt McDougal Larson Algebra 2 , 2011	• check homework • Quizzes • Mid-Chapter Test • Free-Response Chapter test • Oral response • Board work

Unit 10: Counting Methods and Probability [Optional]

Biblical Worldview Essential Question:
What events in the future do we know for certain?

12 Lessons

A2#6

Objectives	Methods	Resources	Assessment
The students will 1. Use fundamental counting principle and permutations. 2. Use combinations and the binomial theorem. 3. Find the likelihood that an event will occur. 4. Find probabilities of compound events. 5. Examine independent and dependent events.	• teacher lecture • teacher working examples on the board • student guided practice of problems in book • cooperative learning groups • individual assistance • partner work • worksheets • homework • show related YouTube videos	Holt McDougal Larson Algebra 2 , 2011	• check homework • Quizzes • Mid-Chapter Test • Free-Response Chapter test • Oral response • Board work

Unit 11: Data Analysis and Statistics [Optional]

Biblical Worldview Essential Question:
What statistics are found in the Bible?

10 Lessons

A2#13, A2#14

Objectives	Methods	Resources	Assessment
The students will 1. Describe data using statistical measures. 2. Learn how transformations of data effect statistics. 3. Study normal distributions. 4. Study different sampling methods for collecting data. 5. Choose best model to represent a set of data.	• teacher lecture • teacher working examples on the board • student guided practice of problems in book • cooperative learning groups • individual assistance • partner work • worksheets • homework • show related YouTube videos	Holt McDougal Larson Algebra 2 , 2011	• check homework • Quizzes • Mid-Chapter Test • Free-Response Chapter test • Oral response • Board work

Unit 12: Sequences and Series [Optional]

Biblical Worldview Essential Question:
What sequence of events led to Christ's crucifixion?

11 Lessons

A2#12

Objectives	Methods	Resources	Assessment
The students will 1. Recognize and write rules for number patterns. 2. Study arithmetic sequences and series. 3. Study geometric sequences and series. 4. Find sums of infinite geometric series. 5. Use recursive rules for sequences.	• teacher lecture • teacher working examples on the board • student guided practice of problems in book • cooperative learning groups • individual assistance • partner work • worksheets • homework • show related YouTube videos	Holt McDougal Larson Algebra 2 , 2011	• check homework • Quizzes • Mid-Chapter Test • Free-Response Chapter test • Oral response • Board work

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Unit 13: Trigonometric Ratios and Functions

Biblical Worldview Essential Question:
Where is the Trinity found in Scripture?

18 Lessons

A2#10, A2#11

Objectives	Methods	Resources	Assessment
The students will 1. Use trigonometric functions to find lengths. 2. Use general angles that may be measured in radians. 3. Evaluate trigonometric functions of any angle. 4. Find angles given values of trigonometric functions. 5. Solve triangles using the law of sines. 6. Solve triangles using the law of cosines. 7. Find areas of triangles using appropriate formulas.	• teacher lecture • teacher working examples on the board • student guided practice of problems in book • cooperative learning groups • individual assistance • partner work • worksheets • homework • show related YouTube videos	Holt McDougal Larson Algebra 2 , 2011	• check homework • Quizzes • Mid-Chapter Test • Free-Response Chapter test • Oral response • Board work

Unit 14: Trigonometric Graphs, Identities, and Equations

Biblical Worldview Essential Question:
How do we discover our identity in Christ?

16 Lessons

A2#10, A2#11

Objectives	Methods	Resources	Assessment
The students will 1. Graph sine, cosine, and tangent functions. 2. Translate and reflect trigonometric graphs. 3. Verify trigonometric identities. 4. Solve trigonometric equations. 5. Model data using sine and cosine functions. [optional]	• teacher lecture • teacher working examples on the board • student guided practice of problems in book • cooperative learning groups • individual assistance • partner work • worksheets • homework • show related YouTube videos	Holt McDougal Larson Algebra 2 , 2011	• check homework • Quizzes • Mid-Chapter Test • Free-Response Chapter test • Oral response • Board work