

**SINCLAIR COMMUNITY COLLEGE
DAYTON, OHIO**

**MATERIALS AVAILABLE FOR
MAT 116 - COLLEGE ALGEBRA**

SEPTEMBER 9, 2009

I. Equations and Inequalities

6. Variation and Applications

116 (traditional) CD Lectures, Disk 2, 1.6
116 Mathspace, Chapter 1, 1.6
116 Nongraphing Computer Tutor 1.6
Computer-Video Lesson 17 Parts 3 and 4 only (video)
116 Computer Tutor Review 8.7
116 Graphing CD Lectures 3.7
116 Graphing InterAct 3.7
V-116 Tape 5 Sec 3.7 "Variation and Applications"
101-102 InterAct Chptr 7.4
101 & 102 CD Lectures 7.4
V-BEJ Tape 7.6
VCOMAP Tape 23 Part 1 "Variation"
VKB Tape 23 Part 3 "Mixed Variation"
College Algebra Interactive Exercises Chptr 1.6 "Variation and Applications"
Boxer Intermediate Algebra Lesson 10 Sec 8 (inverse variation only) (CD)

II. Functions and Graphs

1. A Two-Dimensional Coordinate System and Graphs

116 (traditional) CD Lectures, Disk 2, 2.1
Mosely Trig DVD #1, P.3, "Cartesian Plane and Graphs of Equations"
116 Mathspace, Chapter 2, 2.1
116 Nongraphing Computer Tutor 2.1
116 Graphing CD Lectures 1.1
116 Graphing InterAct 1.1
Trigonometry Interactive Exercises 1.1
TV Sinclair 102 Tape 16
EV 4013 "Circles, Midpoint Formula, and Distance Formula"
Computer-Video Lesson 19 "Rectangular Coordinate System" (video)
VKB 25 Part 1 "The Distance Formula and Midpoints"
V-LHS Tape 1.1 "Basic Concepts" (more→)

116 Computer Tutor Review 4.1
218 Video Examples 1.3
Boxer Intermediate Algebra Lesson 4 Sections 1,2,3,4 (CD)
V-116 Tape 2 Sec 1.1 “Introduction to Graphing”
WORKSHEET “Completing the Square”

II. 2. Introduction to Functions

116 (traditional) CD Lectures, Disk 3, 2.2
Mosely Trig DVD #2, P.5, "Functions"
116 Mathspace, Chapter 2, 2.2
116 Nongraphing Computer Tutor 2.2
EV 4015 “Functions”
116 Graphing CD Lectures 1.2
116 Graphing InterAct 1.2
Trigonometry Interactive Exercises 1.1
College Algebra Interactive Exercises Chptr 1.1
TV Sinclair 102 Tape 5
101-102 InterAct Chptr 7.3
101 & 102 CD Lectures 7.3
V-BEJ 7.4
Computer-Video Lesson 18 “Functions” (parts 1 and 2 only!) (video)
Boxer Intermediate Algebra Lesson 9 Sections 1-4 (CD)
V-116 Tape 2 Sec 1.2 “Functions and Graphs”
VCOMAP Tape 22 Part 1 “Functions”

3. Linear Functions

116 (traditional) CD Lectures, Disk 3, 2.3
Mosely Trig DVD #1, P.4, "Linear Equations in Two Variables"
116 Mathspace, Chapter 2, 2.3
116 Nongraphing Computer Tutor 2.3
116 Graphing CD Lectures 1.3 and 1.4
116 Graphing InterAct 1.3 – 1.4
EV 4014 “Equations of Straight Lines”
116 Computer Tutor Review 11.1
College Algebra Interactive Exercises Chptr 1.2
VKB 6
101-102 InterAct Chptr 7.2
101 & 102 CD Lectures 7.2
V-BEJ 7.1-7.3
218 Video Examples 1.4
EV 6004 “Formulas for Lines”
V-116 Tape 2 Sections 1.3 and 1.4
VCOMAP Tape 20 Part 2 “Linear Relations”

II. 4. Quadratic Functions

116 (traditional) CD Lectures, Disk 3, 2.4
Mosely Trig DVD #1, P.7, "A Library of Functions"
116 Mathspace, Chapter 2, 2.4
116 Nongraphing Computer Tutor 2.4
EV 4020 "Quadratic Functions"
116 Graphing CD Lectures 2.3 and 2.4
116 Graphing InterAct 2.3 – 2.4
College Algebra Interactive Exercises 2.4
116 Computer Tutor Review 11.2
TV Sinclair 102 Tape 14
VKB Tape 24 "Quadratic Functions - Graphs and Applications"
V-116 Tape 3 Sec 2.3 and 2.4
101-102 InterAct Chptr 11.6 and 11.7
101 & 102 CD Lectures 11.6 and 11.7
V-BEJ Tape 11.7-11.9

5. Properties of Graphs

116 (traditional) CD Lectures, Disk 3, 2.5
Mosely Trig DVD #1, P.8, "Transformations of Functions"
116 Mathspace, Chapter 2, 2.5
116 Nongraphing Computer Tutor 2.6
EV 4016 "Graph Sketching" (Even, Odd, Symmetry, Piecewise)
EV 4017 "Shifting and Reflecting Graphs"
116 Graphing CD Lectures 1.7
116 Graphing InterAct 1.7
VHM Tape 1 "Graphing Functions"
Boxer Intermediate Algebra Lesson 9 Sections 9,10 (CD)
V-116 Tape 3 Sec 1.7 "Symmetry and Transformations"
College Algebra Interactive Exercises Chptr 1.5
116 Computer Tutor Review 11.3
WORKSHEET "Translations of Graphs"

6. The Algebra of Functions

116 (traditional) CD Lectures, Disk 3, 2.6
Mosely Trig DVD #2, P.9, "Composite Functions"
116 Mathspace, Chapter 2, 2.6
116 Nongraphing Computer Tutor 2.6
EV 4018 "Algebra of Functions"
116 Graphing CD Lectures 1.6
116 Graphing InterAct 1.6
116 Computer Tutor Review 11.4
V-BEJ Tape 7.5
Boxer Intermediate Algebra Lesson 9 Sections 5,6 (CD)
VCOMAP Tape 22 Part 2 "Composition and Inverse Functions"

III. Polynomial and Rational Functions

1. The Remainder Theorem and the Factor Theorem

116 (traditional) CD Lectures, Disk 4, 3.1
116 Mathspace, Chapter 3, 3.1
116 Nongraphing Computer Tutor 3.1
116 Graphing CD Lectures 3.3
116 Graphing InterAct 3.3
VHM Tape 3 “Synthetic Division, Remainder Thm., and Factor Thm.”
College Algebra Interactive Exercises Chptr 3.2
V-BEJ Tape 4.7-4.8
VKB Tape 17 “Division of Polynomials - Synthetic Division”
V-116 Tape 4 Sec 3.3 “Polynomial Division; Remainder and Factor Thms.”

2. Polynomial Functions of Higher Degree

116 (traditional) CD Lectures, Disk 4, 3.2
116 Mathspace, Chapter 3, 3.2
116 Nongraphing Computer Tutor 3.2
116 Graphing CD Lectures 3.1 and 3.2
116 Graphing InterAct 3.1 – 3.2
EV 4021 “Polynomial Functions”
V-116 Tape 4 Sec 3.1 and 3.2
College Algebra Interactive Exercises Chptr 3.1
VCOMAP Tape 23 Part 2 “Polynomial Functions”

3. Zeros of Polynomial Functions

116 (traditional) CD Lectures, Disk 4, 3.3
116 Mathspace, Chapter 3, 3.4
116 Nongraphing Computer Tutor 3.3
116 Graphing CD Lectures 3.4
116 Graphing InterAct 3.4
EV 4023 “Rational Root Theorem”
VHM Tape 4 “Zeros of a Polynomial”
College Algebra Interactive Exercises Chptr 3.3
V-116 Tape 5 Sec 3.4 “Theorems About Zeroes of Polynomial Functions”
HANDOUT "Finding Zeros of Polynomials"

4. The Fundamental Theorem of Algebra

116 (traditional) CD Lectures, Disk 4, 3.4
116 Mathspace, Chapter 3, 3.4
116 Nongraphing Computer Tutor 3.4
116 Graphing CD Lectures 3.4
116 Graphing InterAct 3.4

5. **Graphs of Rational Functions and Their Applications**

116 (traditional) CD Lectures, Disk 4, 3.5
116 Mathspace, Chapter 3, 3.5
EV 4024 “Vertical and Horizontal Asymptotes”
EV 4025 “Graphing Rational Functions”
116 Nongraphing Computer Tutor 3.5
116 Graphing CD Lectures 3.5
116 Graphing InterAct 3.5
VHM Tape 5 “Graphing Rational Functions”
V-116 Tape 5 Sec 3.5 “Rational Functions”
College Algebra Interactive Exercises Chptr 3.4 “Rational Functions”
VCOMAP Tape 24 Part 1 “Rational Functions”
WORKSHEET “Asymptotes”

IV. **Exponential and Logarithmic Functions**

1. **Inverse Functions**

116 (traditional) CD Lectures, Disk 5, 4.1
Mosely Trig DVD #2, P.10, "Inverse Functions"
116 Mathspace, Chapter 4, 4.1
116 Nongraphing Computer Tutor 4.1
EV 4019 “Inverse Functions”
116 Graphing CD Lectures 4.1
116 Graphing InterAct 4.1
VHM Tape 2 “Inverse Functions”
101-102 InterAct Chptr 12.1
101 & 102 CD Lectures 12.1
College Algebra Interactive Exercises Chptr 4.1
116 Computer Tutor Review 11.5
Boxer Intermediate Algebra Lesson 9 Sections 7,8 (CD)
VCOMAP Tape 22 Part 2 “Composite and Inverse Functions”

2. **Exponential Functions and Their Applications**

116 (traditional) CD Lectures, Disk 5, 4.2
Mosely Trig DVD #5, 5.1, "Exponential Functions and Their Graphs"
116 Mathspace, Chapter 4, 4.2
116 Nongraphing Computer Tutor 4.2
EV 4026 “Exponential Functions and Their Graphs”
116 Graphing CD Lectures 4.2
116 Graphing InterAct 4.2
Trigonometry Interactive Exercises 9.1
VKB Tape 28 Part 1 “Exponential Functions” (graphs)
116 Computer Tutor Review 12.1 (more→)

College Algebra Interactive Exercises Chptr 4.2
Boxer Intermediate Algebra Lesson 12 Sections 2,4 (CD)
V-116 Tape 6 Sec 4.2 “Exponential Functions and Graphs”
101-102 InterAct Chptr 12.2
101 & 102 CD Lectures 12.2
V-BEJ Tape 12.1
VCOMAP Tape 24 Part 2 “Exponential Functions”
WORKSHEET "Exponentials and Logarithms"
WORKSHEET "Graphing Exponential and Logarithmic Functions"

3. Logarithmic Functions and Their Applications

116 (traditional) CD Lectures, Disk 5, 4.3
Mosely Trig DVD #5, 5.2, "Logarithmic Functions and Their Graphs"
116 Mathspace, Chapter 4, 4.3
116 Nongraphing Computer Tutor 4.3
EV 4028 “Logarithms and Their Graphs”
116 Graphing CD Lectures 4.3
116 Graphing InterAct 4.3
Trigonometry Interactive Exercises 9.2
College Algebra Interactive Exercises Chptr 4.3
116 Computer Tutor Review 12.3
VKB Tape 28 Part 2 “Logarithmic Functions” (graphs)
Boxer Intermediate Algebra Lesson 12 Section 6 (CD)
V-116 Tape 6 Sec 4.3 “Logarithmic Functions and Graphs”
101-102 InterAct Chptr 12.3
101 & 102 CD Lectures 12.3
V-BEJ Tape 12.3
VCOMAP Tape 25 Part 1 “Logarithmic Functions”
WORKSHEET "Exponentials and Logarithms"
WORKSHEET "Graphing Exponential and Logarithmic Functions"

4. Properties of Logarithms and Logarithmic Scales

116 (traditional) CD Lectures, Disk 5, 4.4
Mosely Trig DVD #6, 5.3, "Properties of Logarithms"
116 Mathspace, Chapter 4, 4.4
116 Nongraphing Computer Tutor 4.4
EV 4027 “Logarithms and Their Properties”
116 Graphing CD Lectures 4.4
116 Graphing InterAct 4.4
Trigonometry Interactive Exercises 9.2
116 Computer Tutor Review 12.2
VKB Tape 29 Part 1 “Properties of Logarithms”
Boxer Intermediate Algebra Lesson 12 Sections 5,7 (CD)
V-116 Tape 6 Sec 4.4 “Properties of Logarithmic Functions”
101-102 InterAct Chptr 12.4
101 & 102 CD Lectures 12.4 / V-BEJ Tape 12.4

IV. 5. Exponential and Logarithmic Equations

116 (traditional) CD Lectures, Disk 5, 4.5
Mosely Trig DVD #6, 5.4, "Exponential and Logarithmic Equations"
116 Mathspace, Chapter 4, 4.5
116 Nongraphing Computer Tutor 4.5
116 Graphing CD Lectures 4.5
116 Graphing InterAct 4.5
VHM Tape 6 "Logarithmic Expressions and Equations"
Trigonometry Interactive Exercises 9.1 and 9.2
116 Computer Tutor Review 12.4
College Algebra Interactive Exercises Chptr 4.5
VKB Tape 29 Part 3
Boxer Intermediate Algebra Lesson 12 Sections 8,9 (CD)
V-116 Tape 6 Sec 4.5 "Solving Exponential and Logarithmic Equations"
101-102 InterAct Chptr 12.6
101 & 102 CD Lectures 12.6
V-BEJ Tape 12.6
WORKSHEET "Exponentials and Logarithms"

6. Exponential Growth and Decay

116 (traditional) CD Lectures, Disk 5, 4.6
Mosely Trig DVD #6, 5.5, "Exponential and Logarithmic Models"
116 Mathspace, Chapter 4, 4.6
116 Nongraphing Computer Tutor 4.6
116 Graphing CD Lectures 4.6
116 Graphing InterAct 4.6
Trigonometry Interactive Exercises 9.1 and 9.3
116 Computer Tutor Review 12.5
VKB Tape 29 Part 4
V-116 Tape 6 Sec 4.6 "Applications and Models: Growth and Decay"
College Algebra Interactive Exercises Chptr 4.6
101-102 InterAct Chptr 12.6
101 & 102 CD Lectures 12.6
V-BEJ Tape 12.7
Boxer Intermediate Algebra Lesson 12 Section 3 (CD)
VCOMAP Tape 24 Part 2 "Exponential Functions"
VCOMAP Tape 25 Part 1 "Logarithmic Functions"

V. Topics in Analytic Geometry

1. Parabolas

116 (traditional) CD Lectures, Disk 6, 5.1
Mosely Trig DVD #6, 6.2, "Parabolas"
116 Mathspace, Chapter 5, 5.1
116 Nongraphing Computer Tutor 5.1
Chalkdust Video 2 Section 2 "Parabolas"
VHM Tape 15 "The Parabola and Its Graph"
116 Graphing CD Lectures 6.1
116 Graphing InterAct 6.1
College Algebra Interactive Exercises Chptr 6.1 "The Parabola"
V-116 Tape 8 Sec 6.1 "The Parabola"
V-BEJ Tape 13.2
VCOMAP Tape 21 Part 1 "Circle and Parabola"
EV 4021 "Quadratic Functions"
WORKSHEET "Conic Sections"
WORKSHEET "Completing the Square"

2. Ellipses

116 (traditional) CD Lectures, Disk 6, 5.2
Mosely Trig DVD #6, 6.3, "Ellipses"
116 Mathspace, Chapter 5, 5.2
116 Nongraphing Computer Tutor 5.2
Chalkdust Video 2 Section 3 "Ellipses"
VHM Tape 16 "The Ellipse and Its Graph"
116 Graphing CD Lectures 6.2
116 Graphing InterAct 6.2
College Algebra Interactive Exercises Chptr 6.2
V-116 Tape 8 Sec 6.2 "The Circle and Ellipse"
101-102 InterAct Chptr 13.2
101 & 102 CD Lectures 13.2
V-BEJ Tape 13.3
VCOMAP Tape 21 Part 2 "Ellipse and Hyperbola"
WORKSHEET "Conic Sections"
WORKSHEET "Completing the Square"

V. 3. Hyperbolas

116 (traditional) CD Lectures, Disk 6, 5.3
Mosely Trig DVD #6, 6.4, "Hyperbolas"
116 Mathspace, Chapter 5, 5.3
116 Nongraphing Computer Tutor 5.3
Chalkdust Video 2 Section 4 "Hyperbolas"
VHM Tape 17 "The Hyperbola and Its Graph"
116 Graphing CD Lectures 6.3
116 Graphing InterAct 6.3
College Algebra Interactive Exercises Chptr 6.3
V-116 Tape 8 Sec 6.3 "The Hyperbola"
101-102 InterAct Chptr 13.3
101 & 102 CD Lectures 13.3
V-BEJ Tape 13.3
VCOMAP Tape 21 Part 2 "Ellipse and Hyperbola"
WORKSHEET "Conic Sections"
WORKSHEET "Completing the Square"

VI. Systems of Equations and Inequalities

1. Systems of Linear Equations in Two Variables

116 (traditional) CD Lectures, Disk 6, 6.1
116 Mathspace, Chapter 6, 6.1
116 Nongraphing Computer Tutor 6.1
116 Graphing CD Lectures 5.1
116 Graphing InterAct 5.1
EV 2014 "Systems of Equations"
College Algebra Interactive Exercises Chptr 5.1
116 Computer Tutor Review 5.1-5.3
V-116 Tape 7 Sec 5.1 "Systems of Equations in Two Variables"
101-102 InterAct Chptr 8.2 and 8.3
101 & 102 CD Lectures 8.2 and 8.3
V-BEJ Tape 8.1-8.3
VKB Tape 7 "Substitution and Elimination"
VKB Tape 8 "Dependent Systems"
VCOMAP Tape 25 Part 2 "Systems of Equations"
WORKSHEET "Consistency and Dependency"

VI. 3. Nonlinear Systems of Equations

116 (traditional) CD Lectures, Disk 6, 6.3
116 Mathspace, Chapter 6, 6.3
116 Nongraphing Computer Tutor 6.3
EV 4029 “Systems of Nonlinear Equations”
116 Graphing CD Lectures 6.4
116 Graphing InterAct 6.4
College Algebra Interactive Exercises Chptr 6.4
Boxer Intermediate Algebra Lesson 8 Section 8 (CD)
V-116 Tape 8 Sec 6.4 “Non-Linear Systems of Equations”
VKB Tape 27 Part 1 “Systems of Second Degree Equations”
101-102 InterAct Chptr 13.4
101 & 102 CD Lectures 13.4
V-BEJ Tape 13.4

VII. Matrices

1. Gaussian Elimination Method

116 (traditional) CD Lectures, Disk 7, 7.1
116 Mathspace, Chapter 7, 7.1
116 Nongraphing Computer Tutor 7.1
VHM Tape 19 “Solving Systems By Gauss-Jordan Elimination Method”
116 Graphing CD Lectures 5.3
116 Graphing InterAct 5.3
College Algebra Interactive Exercises Chptr 5.3
V-116 Tape 7 Sec 5.3 “Matrices and Systems of Equations”
101-102 InterAct Chptr 8.6
101 & 102 CD Lectures 8.6
V-BEJ Tape 8.6-8.7

2. The Algebra of Matrices

116 (traditional) CD Lectures, Disk 7, 7.2
116 Mathspace, Chapter 7, 7.2
116 Nongraphing Computer Tutor 7.2
VHM Tape 20 “Adding, Subtracting, and Multiplying Matrices”
116 Graphing CD Lectures 5.4
116 Graphing InterAct 5.4
College Algebra Interactive Exercises Chptr 5.4
V-116 Tape 7 Sec 5.4 “Matrix Operations”

VII. 3. The Inverse of a Matrix

116 (traditional) CD Lectures, Disk 7, 7.3
116 Mathspace, Chapter 7, 7.3
116 Nongraphing Computer Tutor 7.3
VHM Tape 21 “Finding the Inverse of a Matrix”
116 Graphing CD Lectures 5.5
116 Graphing InterAct 5.5
College Algebra Interactive Exercises Chptr 5.5
V-116 Tape 7 Sec 5.5 “Inverses of Matrices”

4. Determinants

116 (traditional) CD Lectures, Disk 7, 7.4
116 Mathspace, Chapter 7.4
VHM Tape 22 “Determinants”
116 Nongraphing Computer Tutor 7.4
116 Graphing CD Lectures 5.6
116 Graphing InterAct 5.6
116 Computer Tutor Review 5.4
V-BEJ Tape 8.7

VIII. Sequences, Series, and Probability

1. Infinite Sequences and Summation Notation

116 (traditional) CD Lectures, Disk 8, 8.1
116 Mathspace, Chapter 8, 8.1
116 Nongraphing Computer Tutor 8.1
116 Graphing CD Lectures 7.1
116 Graphing InterAct 7.1
College Algebra Interactive Exercises Chptr 7.1
VAW-22 Part 1
V-116 Tape 9 Sec 7.1 “Sequences and Series”
101-102 InterAct Chptr 14.1
101 & 102 CD Lectures 14.1
V-BEJ Tape 14.1
EV 6045 “Summation Notation” (HARD)