ELEN 170   Tools for Circuit Analysis

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Text: Basical Technical Mathematics with Calculus, 6th Edition
                Allyn J. Washington

Objectives:

This course covers mathematical topics necessary for students to successfully complete circuit analysis and electronics devices courses.

Evaluation:

Tests (4 x 1 hour)   44%
Final Exam   56%

Note: Tests may include a take-home portion that will be distributed prior to the test and will be submitted with the test.

Important Dates:

Test 1   Thursday 30 January 2020 (week 4)
Test 2   Thursday 27 February 2020 (week 8)
Test 3   Thursday 19 March 2020 (week 11)
Test 4   Thursday 2 April 2020 (week 13)
Final Exam   14 - 22 April 2020

Topics:

	Text Reference
Review	
• Functions	Chapter 3
• Trig Functions	Chapter 4, Chapter 8
• Systems of Linear Equations	Chapter 5
• Factoring and Fractions	Chapter 6
• Vectors	Sections 9-1 to 9-4
• Complex Numbers	Chapter 12
• Logarithmic and Exponential Functions	Chapter 13

Quadratic Equations
- Techniques for Solving Quadratic Equations   Chapter 7
- Problems Leading to Quadratic Equations   Chapter 7

Trigonometry
- Degrees and Radians
- Graphing the Sine, Cosine and Tangent Functions   Sections 10-1 to 10-4
- Combinations of Trigonometric Functions   Section 10-6
- Solution of Oblique Triangles (Laws of Sines and Cosines)   Sections 9-5 and 9-6

Trig Formulas and Equations
- Fundamental Identities (to prepare for next section only)   Sections 20-1 to 20-4
- Trigonometric Equations   Section 20-5
- Inverse Trig Functions   Section 20-6

Conic Sections
- The Distance Formula   Section 21-1
- The Straight Line   Section 21-2
- The Circle   Section 21-3

Differential Calculus
- Limits   Section 23-1
- Slope of a Curve   Section 23-2
- Derivative as Rate of Change   Section 23-3 to 23-4
- Rule for Differentiating Powers   Section 23-5
- Product and Quotient Rules   Section 23-6
- Chain Rule   Section 23-7
- Higher Order Derivatives   Section 23-9

Derivatives of Transcendental Functions
- Trigonometric Functions   Section 27-1
- Logarithmic Functions   Section 27-5
- Exponential Functions   Section 27-6

Integral Calculus
- Antiderivatives   Sections 25-1 to 25-2
- Indefinite Integral   Section 25-3
- Area Under a Curve   Section 25-4
- Definite Integral   Section 25-5
- Mean and RMS Values   Section 28-5