

## **MATH 8A**

Textbook: Sullivan: Precalculus. Ninth Edition.

### **Suggested number of 50-minute lectures:**

1.0 lectures – A.1 Algebra Essentials: Real numbers, domain, rules of exponents.

1.0 lectures – A.3 Polynomials: FOIL, special products; division, factoring, completing the square.

0.5 lecture – A.4 Synthetic division.

1.5 lectures – A.5 Rational Expressions.

0.5 lecture – A.6 Solving equations: linear, absolute value, quadratic (part 1.)

0.5 lecture – A.7 Complex numbers and quadratic equations (part 2.)

1.0 lecture – A.8 Problem solving and mathematical modeling.

0.5 lecture – A.9 Interval notation; solving inequalities.

0.5 lecture – 1.1 The distance and midpoint formulas.

0.5 lecture – 1.2 Graphs of equations; intercepts; symmetry.

0.5 lecture – 1.3 Lines; linear equations.

1.0 lecture – 2.1 Functions; operations; difference quotient.

1.0 lecture – 2.2 The graph of a function. 2.3 Properties of functions.

0.5 lecture – 2.4 Library of functions; piecewise functions. (Omit greatest integer function.)

0.5 lecture – 2.5 Graphing; transformations.

1.0 lecture – 5.1 Composite functions.

1.0 lecture – 5.2 One-to-one functions; inverse functions.

0.5 lecture – 3.3 Quadratic Functions and their properties.

0.5 lecture – 3.5 Inequalities involving quadratic functions.

1.0 lectures – 4.1 Polynomial functions; graphing polynomial functions.

1.0 lectures – 4.2 Rational functions. 4.3 Graph of a rational function.

1.0 lecture – 4.4 Polynomial and rational inequalities.

0.5 lecture – 4.5 The real zeros of a polynomial function. (Omit Theorem for Bounds.)

0.5 lecture – 4.6 Complex zeros; Fundamental Theorem of Algebra.

1.0 lecture – 5.3 Exponential functions.

1.0 lecture – 5.4 Logarithmic functions.

1.0 lecture – 5.5 Properties of logarithmic functions.

1.0 lecture – 5.6 Logarithmic and exponential equations.

1.0 lecture – 5.8 Exponential growth and decay. (Omit Logistical Models.)

0.5 lecture – 6.1 Angle and their measure. (Omit arc length and sector of a circle; omit angular velocity.)

0.5 lecture – 6.2 Trigonometric function: Unit Circle Approach.

1.0 lecture – 6.3 Properties of trigonometric functions.

1.0 lectures – 6.4 Graphs of sine and cosine functions.

1.0 lecture – 6.5 Graphs of tangent, cotangent, cosecant and secant functions.

1.0 lecture – 7.1 The inverse sine, cosine and tangent functions. 7.2 The inverse trigonometric functions (continued.)

1.0 lecture – 9.4 Vectors.

1.0 lecture – 10.1 Conics. 10.2 The parabola.

1.0 lecture – 10.3 The ellipse. (Integrate with 1.4 circles)

1.0 lecture – 10.4 The hyperbola.

1.0 lecture – 11.1 System of linear equations.

1.0 lecture – 11.5 Partial fraction decomposition.

1.0 lecture – 11.6 System of nonlinear equations.

1.0 lecture – 11.7 System of inequalities.

2.0 lectures – 12.1 Sequences. 12.2 Arithmetic sequences and series. 12.3 Geometric sequences and series. (Omit Annuity.)