El Monte Union High School District
Course Outline

Course Title:

Department:
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3- Material of Instruction

a. Text

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b. Supplemental Materials and Resources

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4- Course Objectives

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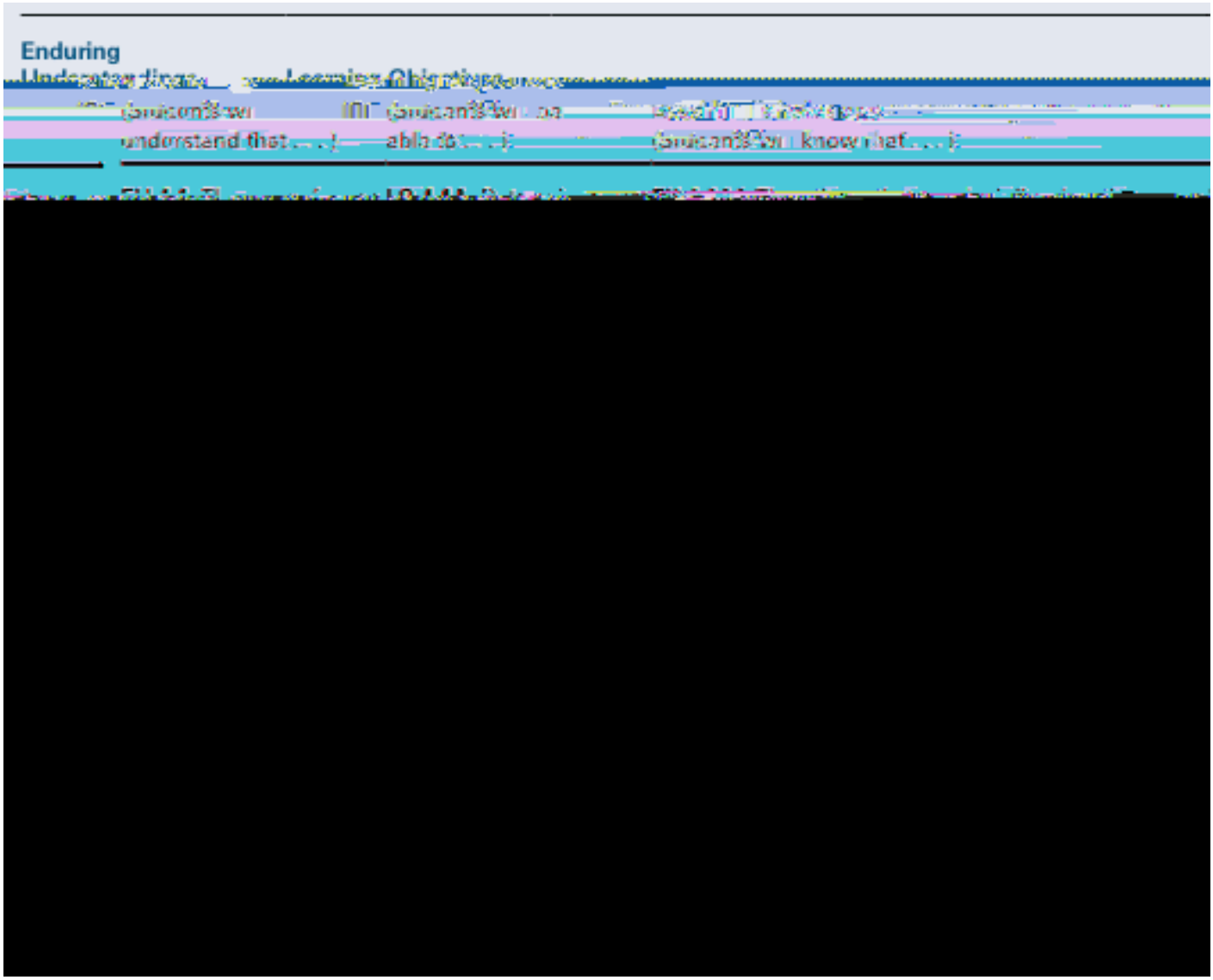
5- Standards (the College Board has grouped the concepts of calculus into four big ideas)

b. Big Idea 2: Derivatives

c. Big Idea 3: Integrals and the Fundamental Theorem of Calculus

d. Big Idea 4: Series



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a. Big Idea 1: Limits

2. **Limits and Continuity** <=>&,8%?0,>#91>0:>?:'#@"A(#B"A(#C"AD
   - 2.1 Rates of Change and Limits
   - 2.2 Limits Involving Infinity
   - 2.3 Continuity
   - 2.4 Rates of Change and Tangent Lines

b. Big Idea 2: Derivatives

3. **Derivatives** <=>&,8%?0,>#91>0:>?:'#E"A(#F"A(#5"A(#G"AD
   - 3.1 Derivative of a Function
   - 3.2 Differentiability
   - 3.3 Rules for Differentiation
   - 3.4 Velocity and Other Rates of Change
   - 3.5 Derivatives of Trigonometric Functions
   - 3.6 Chain Rule
   - 3.7 Implicit Differentiation
   - 3.8 Derivatives of Inverse Trigonometric Functions
   - 3.9 Derivatives of Exponential and Logarithmic Functions

4. **Applications of Derivatives** <=>&,8%?0,>#91>0:>?:'#H"A(#I"A(#@A"A(#@@"A(#@B"AD
   - 4.1 Extreme Values of Functions
   - 4.2 Mean Value Theorem
   - 4.3 Connecting *f '* with *f ''* with the Graph of *f*
   - 4.4 Modeling and Optimization
   - 4.5 Linearization
   - 4.6 Related Rates

c. Big Idea 3: Integrals and the Fundamental Theorem of Calculus

5. **The Definite Integral** <=>&,8%?0,>#91>0:>?:'#@C"A(#@F"AD
   - 5.1 Estimating with Finite Sums
   - 5.2 Definite Integrals
   - 5.3 Definite Integrals and Antiderivatives
   - 5.4 Fundamental Theorem of Calculus
   - 5.5 Trapezoidal Rule

6. **Differential Equations and Mathematical Modeling** <=>&,8%?0,>#91>0:>?:#@G"A(#@H"A(#
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   - 6.1 Antiderivatives and Slope Fields & Euler' Method
   - 6.2 Antiderivatives by Substitution
   - 6.3 Antiderivatives and by Parts
   - 6.4 Exponential Growth and Decay
   - 6.5 Population Growth

7. **Applications of Definite Integrals** <=>&,8%?0,>#91>0:>?:'#@E"A(#@5"AD'

7.1 Integral as Net Change
7.2 Areas in the Plane
7.3 Volumes
7.4 Lengths of Curves

8. **Sequences, L'Hôpital's Rule, Improper Integrals**#<=>&,8%?0,>#91>0:>?:'#@I"A(#BB"AD'

8.1 L'Hôpital's Rule
8.2 Relative Rates of Growth
8.3 Improper Integrals
8.4 Partial Fractions and Integral Tables

10 **Parametric, Vector, and Polar Functions** <$2,'#,'#0%1#>#=>&,8%?0,>#91>0:>?:(#J+1#,1#
##,'#,0!&+:/:#1%#!%.-&4#K,12#12/#=%&&/3/#L%>?:#91>0:>?:#8%?#=>&!+&+'#L=#MND
10.1 Parametric Functions
10.2 Vectors in the Plane
10.3 Polar Functions

d. Big Idea 4: Series

8. **Sequences, L'Hôpital's Rule, Improper Integrals**"

8.1 L'Hôpital's Rule

9. **Infinite Series** <=>&,8%?0,>#91>0:>?:'#BC"A(#BE"A(#BF"A(#B5"A(#BG"AD
9.1 Power Series
9.2 Taylor Series
9.3 Taylor's Theorem
9.4 Radius of Convergence
9.5 Testing Convergence at Endpoints

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