**PACING GUIDE**

**COURSE:** AP Calculus AB **GRADE(S): 12**

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| **MONTH/DAYS** | **UNIT** | **STANDARDS/SKILLS** | **ASSESSMENTS**  What evidence (formative/summative) is utilized to establish that the content, standards, & skills have been mastered? | **CONTENT**  Topics being covered? What do students need to know? (*nouns*) | **ACTIVITIES**  w/Integration of Technology & Career Ready Practices |
| September  (4 weeks) | Functions, Limits, and Continuity | MA.9-12.A-SSE.A  MA.9-12.F-IF.C   |  | | --- | | MA.9-12.N-Q |  |  | | --- | | MA.K-12.1 | | MA.K-12.3 | | MA.K-12.5 | | MA.K-12.6 | | MA.K-12.7 | | Assessment on Rates of change and limits  Assessment on Limits  Assessment on continuity  Assessement on rates of change and tangent lines | Rates of changes  Limits  Limits and infinity  One sided limits  Two sided limits  Finding limits  Rates of change and tangent lines  Normal lines | Partner activity for finding limits  Matching activity for one and two side limits |
| October/Novermber  (6 weeks) | Derivatives | MA.9-12.A-SSE.B  MA.9-12.F-BF.B  MA.9-12.F-IF.B  MA.9-12.F-TF.A  MA.9-12.G-GMD.A  MA.9-12.N-RN  MA.K-12.2  MA.K-12.4  MA.K-12.6  MA.K-12.7  MA.K-12.8 | Assessment on Differentiation  Assessment on Velocity and other rates of change  Assessment on chain rule and implicit differentiation  Assessment on Derivatives of exponential and Logarithmic functions  MPA | Derivative of a function  Power rule  Differentiability  Rules for differentiation  Quotient rule  Product rule  Chain rule  Velocity and other rates of change  Derivative of trig functions  Implicit differentiation  Derivatives of inverse trig functions  Derivatives of exponential and logarithmic functions | Matching activity  Inv trig and trig activity  Implicit Differentiation activity |
| November/December  (6 weeks) | Applications of Derivatives | MA.9-12.A-SSE.B  MA.9-12.F-BF.B  MA.9-12.F-IF.B  MA.9-12.F-TF.A  MA.9-12.G-GMD.A  MA.9-12.N-RN  MA.K-12.2  MA.K-12.4  MA.K-12.6  MA.K-12.7  MA.K-12.8 | Assessment on first and second derivative tests  Assessment on modeling and optimization  Assessment on related rates  Practice ap multiple choice | Extreme values  Mean value theorem  Connecting the graphs of the function and the first and second derivatives  Modeling and optimization  Linearization and Newton’s method  Related Rates | Extreme values and concavity graphing activity  Optimization project  Related rates activity |
| January  (3 weeks) | Integrals | MA.K-12.2  MA.K-12.3  MA.K-12.4  MA.K-12.5  MA.K-12.7  MA.9-12.A-SSE.B  MA.9-12.F-BF.B  MA.9-12.F-IF.C  MA.9-12.F-TF.A  MA.9-12.G-GMD.A  MA.9-12.G-GMD.B  MA.9-12.N-RN.A | Assessment on RAM approximation methods  Assessment on the definite integral  Assessment on the fundamental theorem of calculus  Assessment on the trapezoidal rule  Practice Ap Free response  MPA | RAM approx. methods  Definite integrals  Definite integrals and antiderivatives  Power rule  Fundamental theorem of calculus  trapezoidal rule | RAM activity  Power Rule discovery activity |
| February  (3 weeks) | Integrals continued. | MA.K-12.2  MA.K-12.3  MA.K-12.4  MA.K-12.5  MA.K-12.7  MA.9-12.A-SSE.B  MA.9-12.F-BF.B  MA.9-12.F-IF.C  MA.9-12.F-TF.A  MA.9-12.G-GMD.A  MA.9-12.G-GMD.B  MA.9-12.N-RN.A | Assessment on slope fields  Assessment on integration by substitution  Assessment on integration by parts  Assessment on exponential growth and decay  Practice ap Free response | Antiderivatives and slope fields.  Integration by substation  Integration by parts  Exponential growth and decay  Population growth  Numerical methods | Exponential growth and decay activity  U-substitution activity  Slope field and functions matching activity |
| March  (3 weeks) | Applications of integrals | MA.K-12.2  MA.K-12.3  MA.K-12.4  MA.K-12.5  MA.K-12.7  MA.9-12.A-SSE.B  MA.9-12.F-BF.B  MA.9-12.F-IF.C  MA.9-12.F-TF.A  MA.9-12.G-GMD.A  MA.9-12.G-GMD.B  MA.9-12.N-RN.A | Assessment on Areas in the plane  Assessment on Volumes  MPA | Integral as a net change  Areas in the plane  Volumes and shells  Lengths of Curves | Ti-nspire RAM activity  Volume of disks activity  Areas in a plane function matching.  Increasing/decreasing functions and over/under estimation activity. |
| March/April  (3 weeks) | Applications of integrals: L’hopital’s rule, improper integrals, and partial fractions | MA.K-12.2  MA.K-12.3  MA.K-12.4  MA.K-12.5  MA.K-12.7  MA.9-12.A-SSE.B  MA.9-12.F-BF.B  MA.9-12.F-IF.C  MA.9-12.F-TF.A  MA.9-12.G-GMD.A  MA.9-12.G-GMD.B  MA.9-12.N-RN.A | Assessment on Rates of Growth  Assessment on improper integrals | L’Hopitals rule  Relative rates of growth  Improper integrals  Partial Fractions and integral Tables | Integral Tables activity |
| April/May  (3 weeks) | Review for the ap exam | MA.K-12.2  MA.K-12.3  MA.K-12.4  MA.K-12.5  MA.K-12.7  MA.9-12.A-SSE.B  MA.9-12.F-BF.B  MA.9-12.F-IF.C  MA.9-12.F-TF.A  MA.9-12.G-GMD.A  MA.9-12.G-GMD.B  MA.9-12.N-RN.A | Practice ap exams  (at least 3)  (2014, 2016, 2017) | All topics covered throughout the entire year | Practice ap multiple choice  Practice ap free response  Jeopardy review game |
| May/June  (3 weeks) | Post Ap Exam | MA.K-12.2  MA.K-12.3  MA.K-12.4  MA.K-12.5  MA.K-12.7  MA.9-12.A-SSE.B  MA.9-12.F-BF.B  MA.9-12.F-IF.C  MA.9-12.F-TF.A  MA.9-12.G-GMD.A  MA.9-12.G-GMD.B  MA.9-12.N-RN.A | End of year project to cover concepts taught all year. | All topics covered throughout the entire year | Lantern Project  Board game  Flash cards  collage |
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