

Calculus SYLLABUS

2017-2018 Academic School-Year

1st Marking Period

Test (P.1, P.3, Review Packet) *NJSLS.F-IF.A.1, NJSLS.F-IF.B.5 NJSLS.F-IF.C.7, NJSLS.F-IF.B.6*

- Review Functions – Section P1-P2
- Representing Functions – Section P1-P2
- Inverse, Exponential, and Logarithmic Functions – Section P-3
- Trig Functions and their Inverses – Section P-3

Test (1.2, 1.3, 1.4, 1.5, 3.5) *NJSLS.F-IF.A.1, NJSLS.F-IF.B.5 NJSLS.F-IF.C.7, NJSLS.F-IF.B.6*

- The Idea of Limits – Section 1.1
- Definition of Limits – Section 1.2
- Techniques for Computing Limits - Section 1.2, 1.3
- Infinite Limits – Section 1.5
- Limits at Infinity – Section 3.5
- Continuity – Section 1.4
- Precise Definition of Limits – Section 1.2, 1.3

Test (2.1, 2.2) *NJSLS.F-IF.A.1, NJSLS.F-IF.B.5 NJSLS.F-IF.C.7, NJSLS.F-IF.B.6*

- Introduction to Derivatives – Section 2.1
- Working with Derivatives – Section 2.1
- Basic Rules of Differentiation; Power Rule and Trigonometric Derivatives – Section 2.2

2nd Marking Period

Test (2.3, 2.4, 2.5) *NJSLS.F-IF.A.1, NJSLS.F-IF.B.5 NJSLS.F-IF.C.7, NJSLS.F-IF.B.6*

- The product and quotient rules- Section 2.3
- The Chain Rule-Section 2.4
- Derivatives as Rates of Change- Section 2.2 (p.111-112) and Section 2.3 (p.123) □ Implicit Differentiation- Section 2.5

Test (5.1, 5.4, 5.5) *NJSLS.F-IF.A.1, NJSLS.F-IF.B.5 NJSLS.F-IF.C.7, NJSLS.F-IF.B.6*

- Derivatives of Logarithmic Functions- Section 5.1
- Derivatives of Exponential Functions- Section 5.4 (p.343)
- Bases Other than e-Section 5.5 (p. 352-353)
*Derivatives Only

Test (5.8 and 2.6) *NJSLS.F-IF.A.1, NJSLS.F-IF.B.5 NJSLS.F-IF.C.7, NJSLS.F-IF.B.6*

- Derivatives of Inverse Trigonometric Functions-Section 5.8
- Related Rates-Section 2.6

3rd Marking Period

Test (3.1, 3.3, 3.4, and 3.6) *NJSLS.F-IF.A.1, NJSLS.F-IF.B.5 NJSLS.F-IF.C.7, NJSLS.F-IF.B.6*

- Extrema on an Interval-Maxima and Minima-Section 3.1
- Increasing and Decreasing Functions-Section 3.3
- Concavity and the Second Derivative Test-Section 3.4
- A Summary of Curve Sketching-Graphing Functions-Section 3.6

Test (3.7 and 3.9) *NJSLS.F-IF.A.1, NJSLS.F-IF.B.5 NJSLS.F-IF.C.7, NJSLS.F-IF.B.6*

- Optimization Problems-Section 3.7
- Differentials-Section 3.9

Test (3.2, 7.7) *NJSLS.F-IF.A.1, NJSLS.F-IF.B.5 NJSLS.F-IF.C.7, NJSLS.F-IF.B.6*

- Rolle's Theorem and Mean Value Theorem 3.2
- L'Hôpital's Rule- Section 7.7
- Newton's Method (**Optional**)- Section 3.8

4th Marking Period

Test (4.1 and 4.2) *NJSLS.F-IF.A.1, NJSLS.F-IF.B.5 NJSLS.F-IF.C.7, NJSLS.F-IF.B.6*

- Antiderivatives-Section 4.1
- Area: Approximating areas under Curves-Section 4.2

Test (4.3 and 4.4) *NJSLS.F-IF.A.1, NJSLS.F-IF.B.5 NJSLS.F-IF.C.7, NJSLS.F-IF.B.6*

- Riemann Sums and Definite Integrals- Section 4.3
 - The Fundamental Theorem of Calculus- Section 4.4
- *Include Mean Value Theorem for Integrals and Average Value of a Function

Test (4.5 and 6.1) *NJSLS.F-IF.A.1, NJSLS.F-IF.B.5 NJSLS.F-IF.C.7, NJSLS.F-IF.B.6*

- Integration by Substitution- Section 4.5
- Area of Region Between Two Curves (Time Permits)-Section 6.1

Course Expectations and Skills

- Students are required to have proficiency in all prerequisite topics for Calculus. Those who do not demonstrate proficiency will be required to seek additional help after school to close their achievement gap in order to be successful in this course.
- Students are required to take notes and maintain those notes in a neat and organized notebook.
- Students are to bring their Chrome Book charged and ready to use for the lesson.
- Students are encouraged to have a graphing calculator.
- Students are required to participate in both small and large group discussions and activities, as directed.

Resources

Text Book: Calculus of a Single Variable, 7th Edition, **Larson**

Additional Resources: Teacher Determined

Assessment Information

Department of Mathematics – Calculus (2017-2018)

| <u>Marking Period 1</u> | <u>Marking Period 2</u> | <u>Marking Period 3</u> | <u>Marking Period 4</u> |
|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| Major (MAJ): Summative 50% | Major (MAJ): Summative 50% | Major (MAJ): Summative 50% | Major (MAJ): Summative 50% |
| Benchmark (BMK): 20% | Benchmark (BMK): 20% | Benchmark (BMK): 20% | Final (EOC): 20% |
| Minor (MIN): Formative 20% | Minor (MIN): Formative 20% | Minor (MIN): Formative 20% | Minor (MIN): Formative 20% |
| Class Participation (CP): 5% | Class Participation (CP): 5% | Class Participation (CP): 5% | Class Participation (CP): 5% |
| Homework (HW): 5% | Homework (HW): 5% | Homework (HW): 5% | Homework (HW): 5% |