Mathematics SL

Semester 1 coverage by chapter and Unit

**Unit 1:**

Chapter 1: Functions

1. Relations and Functions
2. Function Notation
3. Domain and Range
4. Composite functions
5. Sign Diagrams (you should be able to generate these without calculator)
6. The reciprocal function
7. Asymptotes of other rational functions
8. Inverse functions

Chapter 2: Sequences and Series

1. Number patters
2. Sequences of numbers
3. Arithmetic sequences (linked to linear functions and constant growth)
4. Geometric sequences (linked to exponential functions and exponential growth (i.e. compound growth in finance or population growth)
5. Series (the sum of a sequence)

**Unit 2:**

Chapter 3: Exponentials

1. Index notation
2. Evaluating powers
3. Index laws (know these by heart!)
4. Rational indices
5. Algebraic expansion and factorization
6. Exponential equations
7. Graphs of exponential equations
8. Growth and decay
9. The natural exponential (One Eyed Lennys special number *e*!)

Chapter 4: Logarithms (the inverse for exponentials)

1. Logarithms
2. Logs in Base 10
3. Laws of logs (also know these bar heart!)
4. Natural logs
5. Exponential equations using logarithms
6. The change of base rule (this is a useful rule but remember the new operating system on the TI 84 can handle different bases as well)
7. Graphs of logarithmic equations
8. More growth and decay problems (this time using logs to solve!)

**Unit 3:**

Chapter 5: Graphing and transforming functions

1. Families of functions
2. Transformations of graphs (know the six transformations by heart! see the summaries in the blue boxes)

Chapter 6: Quadratic equations and functions

1. Quadratic equations
2. The discriminant of a quadratic
3. Graphing quadratic functions
4. Finding a quadratic from its graph
5. Where functions meet
6. Problem solving with quadratics
7. Quadratic optimization problems (finding maximum and minimum for real life applications)

Ch. 7 The Binomial Expansion

1. Binomial expansion
2. WE MAY DISCUSS THE BINOMIAL THEOREM BUT THIS WILL NOT BE ON THE EXAM.

Please note this is a VERY ruff outline of the topics we have covered this semester. Use this outline in conjunction with your notes, HW, quizzes and tests, as you revise.

I suggest going through this document and writing a summary of the most important equations and points from each chapter. (i.e. –f(x) is the reflection over the x axis from chapter 5….what are the other transformations?!)

The exam will be split into CALCULATOR and NON-CALCULATOR sections.