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| Topic 1: Algebra | | | | | | | | | | | | *Sequences and Series* | | | | | | | | | | |
| A sequence is a set of terms which follow a rule (pattern) | | | | | | | | | |  | | | | | | | | | | | | |
| Arithmetic Progression: Terms differ by a common difference, | | | | | | | | | | |  | | | | | | | | | | | |
|  | | | |  | | | | | | |  | |  | | |  | | | | |  | |
| Sum of arithmetic progression | | | | | | |  | | | | | | | |  | | | | | | | |
| Geometric Progression: Terms differ by a common ratio, | | | | | | | | | | | |  | | | | | | | | | | |
|  | |  | | | | |  | | | | |  | | |  | | | |  | | | |
| Sum of geometric progression | | | | |  | | | | | | | Sum of infinite geometric progression | | | | | |  | | | | |
| Topic 1: Algebra | | | | | | | | | | | | *Exponents and Logarithms* | | | | | | | | | | |
| Exponent (Index) Laws: | | | | | | | | | | | | Logarithm Laws: | | | | | | | | | | |
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|  | | |  | | | | |  |
| Graphs of exponential functions and | | |  | | | | | | | | | Change of Base Formula | | | | | | | |  | | |
|  | | | | | | | |
| No stationary points | | | Graphs of logarithms | | | | | | | | | | |
| Always positive | | |  | | | | | | | | | | |
| Always increasing | | |
| y-axis is HA | | |
| No VA | | |
| One-to-one | | |

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| Topic 1: Algebra | | | | *Induction* | | | | | | | |
| 1. Test | | Let | | | | | Ensure | | | | |
| 2. Assume | | Assume true for | | | | | Substitute for in statement | | | | |
| 3. Prove | | Let | | | | | Substitute part of with | | | | |
| 4. Explain | | Since statement is true for , then it is also true for  The proposition is true for and | | | | | | | | | |
| Topic 1: Algebra | | | | *Complex Numbers* | | | | | | | |
| There are two types of complex numbers | | | |  | |  | | |  | |  |
| polar form | mod-arg form | | | Modulus (): The distance from the origin | | | | |  | | |
|  |  | | | Argument (): the angle is subtended from the real axis | | | | |  | | |
| Topic 1: Algebra | | | | *Permutations and Combinations* | | | | | | | |
| AND | | | OR | | | | | EXCLUDING | | | |
| Permutations (pick):  To pick objects out of distinct objects is: | |  | | Combinations (choose):  To choose objects out of distinct objects (order not important) is: | | | | |  | | |
| Topic 1: Algebra | | | | *Sum and Product of Roots* | | | | | | | |
| Formula of Quadratic: or | | | | | | | | | | | |
| For a quadratic equation: | |  | | For a polynomial: |  | | | | | | |
|  | |  | | | | | Odd number: Negative  Even number: Positive | |