**LANGDON PARK SIXTH FORM**

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| **Subject: Mathematics** | **Year: Y12** | **Topic 6 Integration**  |

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| ***What and Why*:** Integration is the inverse of differentiation, and will require plenty of experience of differentiation. You will recognise the derivatives of known functions, and learn several useful methods for evaluating more difficult integrals. This will be applied further in year 13 and also extensively during mathematical degree programmes. |

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| **Key terms****Integration as a concept*** Understand integration as the inverse of differentiation
* Know and use the Fundamental Theorem of Calculus
* Evaluate definite integrals; use a definite integral to find the area under a curve and the area between two curves.
* Understand and use integration as the limit of a sum
* Evaluate the analytical solution of simple first order differential equations with separable variables, including finding solutions.
* Interpret the solution of a differential equation in the context of solving a problem, including identifying limitations of the solution; includes links to kinematics
 | **Applications of Integration** * Integrate x n (excluding n = −1), and related sums, differences and constant multiples.
* Integrate ekx, $\frac{1}{x}$ sin kx , cos kx and related sums, differences and constant multiples.
* Carry out simple cases of integration by substitution and integration by parts
* Understand these methods as the inverse processes of the chain and product rules, respectively.
* Integrate using partial fractions that are linear in the denominator.
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| **Specification point** | **Pre-reading** | **Application and Assessment (date)** | **Independent learning** | **Extension – Cultural Capital and Reading** |
| H1-H8 | **Topics you should be confident in prior to unit:**DifferentiationLimitsSubstitutionFunctionsPartial fractions and binomial expansion**Websites**<https://www.mathsisfun.com/calculus/integration-introduction.html> | * End of unit assessment
* 50% seen
* 50% unseen
* 90% pass needed or resit required.
 | Kerboodle Online LoginMy MathsExam SolutionsMaths Genie  | **Article**: **From A Random World to a Rational Universe** <https://nrich.maths.org/6120>**Podcast:** [**https://plus.maths.org/content/tour-through-maths-and-music**](https://plus.maths.org/content/tour-through-maths-and-music)**Enrichment:** [**https://undergroundmathematics.org/calculus-meets-functions/r8987**](https://undergroundmathematics.org/calculus-meets-functions/r8987) |

**Pre-assessment content review**

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| I feel secure in | I need to focus on | My action plan |

**Pre-assessment skills review**

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| I feel secure in | I need to focus on | My action plan |

**Post-assessment review**

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| Weaknesses in content knowledge | Skills I need to focus on | My action plan |
| Retest / review – teacher and student comment |

**Revision planning**

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| Spec point | Notes complete | Revision materials | Past paper Qs  | Timed conditions |
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