**LANGDON PARK SIXTH FORM**

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| **Subject: Mathematics** | **Year: Y13** | **Unit 2b Integration 2** |

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| ***What and Why*** “You have already met integration and how to carry out basic integration techniques. In this unit you will develop your skill in using more advanced integration techniques and how to apply them to a variety of problems. These techniques are often crucial to hitting the higher grades at A Level and are essential for anyone wanting to undertake a degree in mathematics, science, engineering or finance.” |

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| **Key terms:**  Inspection  Inverse chain rule  Partial fractions  Substitution  Limits  Product rule  Integration by parts Differential equations  Separation of variables | **Key ideas**   * Recognising when the inverse chain rule can be used to find an integral * Understand how a substitution or change of variable and limits can help find integrals * Understand that the product rule can be used in reverse to allow you find integrals “by parts: * Understand how to use separation of variables to solve simple differential equations * Understand how boundary conditions allow you to find particular solutions of differential equations | **Applications of Integration**   * be able to recognise situations in which inspection and the use of the inverse chain rule I can quickly allow you to find integrals and develop your fluency in doing this * Apply your knowledge of partial fractions to calculate integrals * Apply your understanding substitution and change of variable and limits to efficiently calculate integrals * Apply your understanding of the product rule in reverse to efficiently use integration by parts to find integrals * Understand how repeated application of integration by parts can help find some particularly tricky integrals * Know how to use separation of variables to solve simple differential equations, including using boundary conditions to find particular solutions |

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| **Specification point** | **Pre-reading** | **Application and Assessment (date)** | **Independent learning** | **Extension – Cultural Capital and Reading** |
| H5 H6 | **Topics you should be confident in prior to unit:**  All the material covered in the Differentiation and in the Integration 1 unit and also the Partial Fractions skills you learned in year 12  **REVISE ALL THIS MATERIAL THOROUGHLY BEFORE BEGINNING THIS UNIT** | * End of unit assessment, which will also include selected year 12 material * 50% seen * 50% unseen * 90% pass needed or resit required. | Kerboodle Online Login  My Maths  Exam Solutions  Maths Genie | **VIDEOS:** Video on the historical development of calculus  <https://www.youtube.com/watch?v=rBVi_9qAKTU>Also Useful videos on how to choose which integration technique  [**https://www.youtube.com/watch?v=KIRRxmxw4b4**](https://www.youtube.com/watch?v=KIRRxmxw4b4)  **Enrichment:** Some challenging problems on integration to test your skill**:**[**https://undergroundmathematics.org/chain-rule/which-substitution**](https://undergroundmathematics.org/chain-rule/which-substitution)  [**https://undergroundmathematics.org/product-rule/integral-chasing-2**](https://undergroundmathematics.org/product-rule/integral-chasing-2)  [**https://nrich.maths.org/2375**](https://nrich.maths.org/2375) |

**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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