Integration
Checklist

Use this alongside our Walkthrough Guides to tick off the concepts you're confident with to plan your study and find areas of improvement!

Integration

- ◯ I can explain what a **function** is
- ◯ I can explain the relationship between differentiation and integration
- ◯ I can use the symbol $\int dx$ and explain what dx means
- ◯ I can integrate a simple function
- ◯ I can integrate exponentials
- ◯ I can integrate natural logs
- ◯ I can integrate trigonometry functions
- ◯ I can explain what cosecant, secant, and cotangent are
- ◯ I can use double angle formulae to solve problems with $\cos^2 x$ or $\sin^2 x$
- ◯ I can use double angle formulae when there's a number in front of x, like $\cos^2 3x$
- ◯ I can integrate trig products using the formulas on my formula sheet
- ◯ I can explain why we write the constant c in integrated functions
- ◯ I can find the value of the constant

Integration Rules

- ◯ I can use the chain rule to integrate a function
- ◯ I can integrate products using the reverse chain rule
- ◯ I can integrate using substitution when a function's power is very high
- ◯ I can integrate products using substitution
- ◯ I can integrate functions in the form $\frac{f'(x)}{f(x)}$
- ◯ I can integrate functions in the form $\frac{ax+b}{cx+d}$

Areas

- ◯ I can explain what a definite integral is
- ◯ I can use definite integrals to find the area under a function
- ◯ I can find the absolute area (area under the x-axis, which is negative)
- ◯ I can find the area between the curve and the y axis
- ◯ I can find the areas between two curves
- ◯ I can subtract two functions into one to make finding the area easier
- ◯ I can use the trapezium rule to find the area under a curve
- ◯ I can explain the difference between Simpson's rule and the trapezium rule
- ◯ I can use Simpson's rule to find the area under a curve

Differential Equations

- ◯ I can explain what proportionality is and why constants are needed
- ◯ I can explain what different proportions tell us about the relationship between two variables
- ◯ I can write a differential equation, based on a word equation
- ◯ I can solve a differential equation generally as a function
- ◯ I can solve a differential equation specifically, as a number value
- ◯ I can separate variables to integrate
- ◯ I can use A in exponential functions instead of +c if I've converted them from a differential equation
- ◯ I can list the types of contexts differential equations will appear in
- ◯ I can apply differential equations to real-life problems and talk about them, in context

Kinematics

- ◯ I can use integration to turn a function for acceleration into velocity, and from velocity into distance
- ◯ I can use kinematics in a definite integral problem
- ◯ I can use kinematics in a differential equation problem