A2 Level Core 3

	What You Need To Know			
1. Algebra and Functions	• Definition of a function including the notation $f(x)$ • Domain and Range of a function • Composition of functions such as $fg(x) = f(g(x))$ • Inverse Functions and Their Graphs • The Modulus Function • Combinations of transformations of graphs			
2. Trigonometry	• Knowledge of $\sin^{-1}, \cos^{-1}$ and $\tan^{-1}$ functions. • Understanding of the graphs of inverse trig functions and their domains • Knowledge of secant, cosecant and cotangent. Their relationship to cos, sine and tan; and their domain and graphs. • Knowledge and the use of $1 + \tan^2 x = \sec^2 x$. and $1 + \cot^2 x = \csc^2 x$.			
3. Exponentials and Logarithms	• The function of e^x and it's graph			
4. Differentiation	• Differentiation of e^x, $\ln x$, $\sin x$, $\cos x$, $\tan x$ and linear combinations of these functions • Differentiation using the product rule, quotient rule, the chain rule and by the use of $\frac{dy}{dx} = \frac{1}{\frac{dx}{dy}}$			
5. Integration	• Integration of e^x and $\frac{1}{x}$, $\sin x$, $\cos x$. • Simple cases of integration by inspection or substitution and integration by parts. • The methods as the reverse process of the product and chain rule. • Evaluation of a volume of revolution			
6. Numerical Methods	• Location of roots of $f(x) = 0$ by considering the changes of sign of $f(x)$ is continuous. • Approximate solutions of equations using simple iterative methods, including recurrence relations of the form $x_{n+1} = f(x_n)$ • Numerical integration of function using the mid-ordinate rule and Simpson's Rule.			