

YEAR 11 - MATHEMATICS

Preliminary Topic 19(2) - Exponentials and Logs

MATHEMATICS ADVANCED

LEARNING PLAN

Learning Intentions Student is able to:	Learning Experiences Implications, considerations and implementations:	Success Criteria I can:	Resources
Discover the natural base has a relationship with the gradient of the tangent.	Use technology to display the special relationship with the gradient of the tangent with an exponential with a base of Euler's number.	I can differentiate exponentials with the base of Euler's number.	
Differentiate more complex exponential functions.		I can differentiate more complex exponential functions..	
Apply special relationships involving the natural logarithm.	- Define a natural log as having a base e. - Recognise the inverse relationship with $y = e^x$ and $y = \log_e x$. - Understand that $y = e^{\log_e x}$, where $x > 0$ and $\ln(e^x) = x$, for all real x values. - Use the logarithmic laws to simplify and evaluate natural logarithmic expressions and solve equations.	I can apply the natural logarithm to a range of concepts.	

	Solve equations involving logarithm and indices with a natural base.		
Graph more complex exponential functions	Use technology to graph more complex graphs of exponentials.	I can graph exponentials in the form $y = ke^x + c$ and $y = ke^{x+b}$, where k , b and c are constants.	
Establish and use the algebraic properties of exponential functions to simplify and solve problems.	- Solve equations involving exponentials. - Solve problems involving exponentials. - Solve problems involving exponentials in a practical and abstract context.	I can solve problems involving exponentials.	
Graph more complex logarithmic functions.	- Use technology to graph more complex logarithmic functions. - Revise the relationship between the graphs $y = e^x$, $y = x$ and $y = \log_e x$.	I can graphs logarithmic functions in the form between the graphs $y = \log_a x$ for $x > 0$ and between the graphs $y = k \log_a x + c$, where k, b and c are constants. I understand that $y = a^x$ and $y = \log_a x$ are reflections in the line $y = x$	
Model situations and equations involving logarithmic and exponential functions.	- Solve practical problems involving log and exponential functions. - Identify context suitable for modelling by exponential and logarithmic functions. - Use these functions to solve practical problems.	I can solve practical problems involving logs and exponentials.	