	What students need to learn:			
Горіс	Content		Guidance	
4 Further algebra and functions	4.1	Understand and use the relationship between roots and coefficients of polynomial equations up to quartic equations.	For example, given a cubic polynomial equation with roots $\alpha$ , $\beta$ and $\gamma$ students should be able to evaluate expressions such as, (i) $\alpha^2 + \beta^2 + \gamma^2$ (ii) $\frac{1}{\alpha} + \frac{1}{\beta} + \frac{1}{\gamma}$ (iii) $(3 + \alpha) (3 + \beta) (3 + \gamma)$ (iv) $\alpha^3 + \beta^3 + \gamma^3$	
	4.2	Form a polynomial equation whose roots are a linear transformation of the roots of a given polynomial equation (of at least cubic degree).		
	4.3	Understand and use formulae for the sums of integers, squares and cubes and use these to sum other series.	For example, students should be able to sum series such as $\sum_{r+1}^{n} r^2 (r+2)$	

Торіс	What students need to learn:			
	Content		Guidance	
4 Further algebra and functions continued	4.4	Understand and use the method of differences for summation of series including use of partial fractions.	Students should be able to sum series such as $\sum_{r=1}^{n} \frac{1}{r(r+1)}$ by using partial fractions such as $\frac{1}{r(r+1)} = \frac{1}{r} - \frac{1}{r+1}$	
	4.5	Find the Maclaurin series of a function including the general term.		
	4.6	Recognise and use the Maclaurin series for $e^x$ , $\ln(1+x)$ , sin $x$ , $\cos x$ and $(1+x)^n$ , and be aware of the range of values of $x$ for which they are valid (proof not required).	To include the derivation of the series expansions of compound functions.	