Year 12   Topic 1   Graphing Techniques   Time: 3 Weeks

TOPIC: MA-F2 Graphing Techniques

Student Outcomes: MA12 – 1, 9, 10
A student:

> › uses detailed algebraic and graphical techniques to critically construct, model and evaluate arguments in a range of familiar and unfamiliar contexts MA12-1

> › chooses and uses appropriate technology effectively in a range of contexts, models and applies critical thinking to recognise appropriate times for such use MA12-9

> › constructs arguments to prove and justify results and provides reasoning to support conclusions which are appropriate to the context MA12-10

Reading Strategies
- Annotate the Question
- Vocabulary Pre-Teach + Morphology
- Graph/Diagram Decode Routine
- Skim–Scan–Select Routine
- Morphology for Vocabulary Instruction

	Student is able to:	Implications, considerations and implementations	Resources
(i)	Apply transformations to sketch functions of the form $y = kf(a(x + b)) + c$, where $f(x)$ is a polynomial, reciprocal, absolute value, exponential or logarithmic function and $a,\ b, c$ and k are constants – examine translations and the graphs of $y = f(x) + c$ and $y = f(x + b)$ using technology – examine dilations and the graphs of $y = kf(x)$ and $y = f(ax)$ using technology. – recognise that the order in which transformations are applied is important in the construction of the resulting function or graph.		
(ii)	Use graphical methods with supporting algebraic working to solve		

	a variety of practical problems involving any of the functions within the scope of this syllabus, in both real-life and abstract contexts
	    – select and use an appropriate method to graph a given function, including finding intercepts, considering the sign of $f(x)$ and using symmetry
	    – determine asymptotes and discontinuities where appropriate (vertical and horizontal asymptotes only)
	    – determine the number of solutions of an equation by considering appropriate graphs
	    – solve linear and quadratic inequalities by sketching appropriate graphs		