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| Periodic Functions & Applications (b) | • Define “radian”  
• Exact values  
• Symmetry properties  
• Definition of a periodic function, the period and amplitude  
• definition of the trigonometric functions sinθ, cosθ and tanθ for any angle in degrees and in radians  
• graphs of $y = \sin x$, $y = \cos x$ and $y = \tan x$ for any angle in degrees ($-360^\circ \leq x \leq 360^\circ$) and in radians ($-2\pi \leq x \leq 2\pi$)  
• significance of the constants $A$, $B$, $C$ and $D$ on the graphs of $y = A\sin B(x + C) + D$  
• applications of periodic functions  
• review of Quadratic Equations  
• solutions to simultaneous equations in two variables:  
  - graphically, using technology  
  - algebraically (linear and quadratic equations only)  
• general shapes of functions, including:  
  - polynomials up to degree 4  
  - reciprocal functions  
  - absolute value functions  
• relationships between the graph of $f(x)$ and the graphs of $f(x) + a$, $f(x + a)$, $af(x)$, $f(ax)$ for both positive and negative values of the constant $a$  
• practical applications:  
  - polynomials up to degree 2  
  - reciprocal functions  
  - absolute value functions  
• understanding of a limit in simple situations  
• derivative of simple algebraic functions from first principles  
• evaluation of the derivative of a function at a point  
• interpretation of instantaneous rate of change at a point as the gradient of a tangent and as the derivative at that point  
• rules for differentiation including: derivative of $f(x) = ax^n$ where $n$ is a rational number, derivative of $k.f(x)$, derivative of $f(x)+g(x)$; chain rule and product rule.  
• interpretation of the derivative as the gradient function  
• practical applications of instantaneous rates of change | 4 weeks | EXAMS | KAPS Exam 80 mins | Wed 29 Aug |
|                                |                                                                                                                                                                                                     |                  | MAPS Exam 80 mins     | Thurs 30 Aug |
| Introduction to Functions (b)  |                                                                                                                                                                                                     | 6 weeks          | ASSIGNMENT         | EMT 3 weeks Individual work | Wed 24th Oct |
| Rates of Change (b)            |                                                                                                                                                                                                     | 5 weeks          | EXAMS | KAPS Exam 90 mins | Exam Block |
|                                |                                                                                                                                                                                                     |                  | MAPS Exam 90 mins     |             |