



Calculus

Maths Past Exam Questions

Marking Schemes

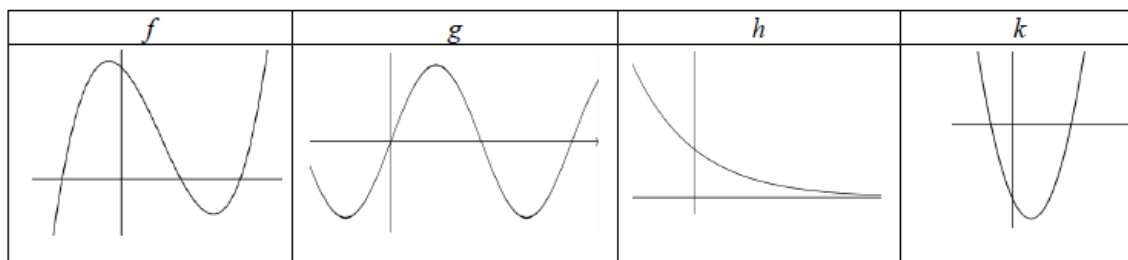
Higher Level

2013 Paper One- Project Maths - Section A - Q5

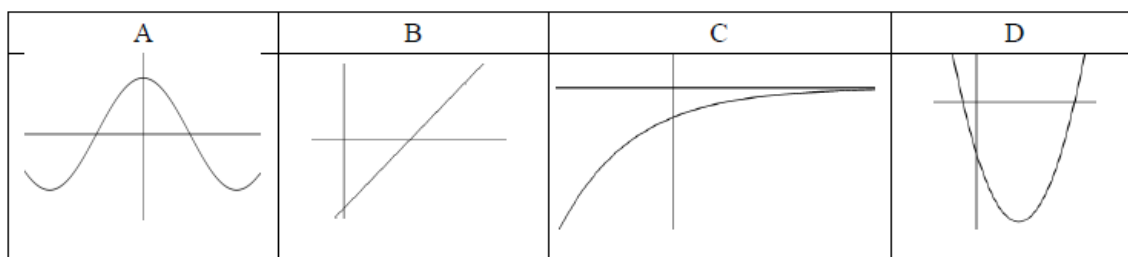
Question 5

(25 marks)

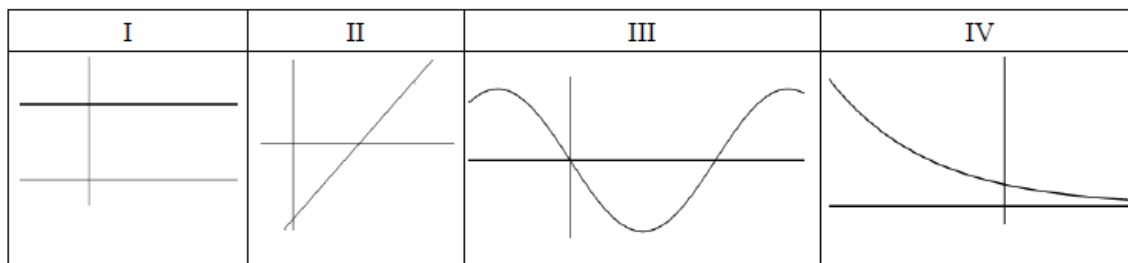
Each diagram below shows part of the graph of a function. Each is one of these: quadratic, cubic, trigonometric or exponential (not necessarily in that order).



Each diagram below shows part of the graph of the first derivative of one of the above functions (not necessarily in the same order).



Each diagram below shows part of the graph of the second derivative of one of the original functions (not necessarily in the same order).



(a) Complete the table below by matching the function to its first derivative and its second derivative.

Type of function	Function	First derivative	Second derivative
Quadratic	<i>k</i>	B	I
Cubic	<i>f</i>	D	II
Trigonometric	<i>g</i>	A	III
Exponential	<i>h</i>	C	IV

(b) For **one** row in the table, explain your choice of first derivative and second derivative.

A quadratic function differentiates to a line which differentiates to a constant.