MERIT QUESTIONS ON A TYPICAL NCEA PAPER. (A) ALGEBRA You need to get these right for Merit level Question ONE

(a) Simplify $\frac{x^2 - x - 6}{x^2 + x - 12}$	(b) Solve $\frac{x^2 + 3x + 2}{2x - 1} = 5x + 3$	
Or or the TWO		
Question TWO	1	
(a) If $A = 400 \times (1.2)^n$ calculate <i>n</i> if $A = 900$	(b) Find the only valid solution to	
	$x^2 - 6x + 8 = 5$	
	r-4	
Question THREE		
(a) Find k if the equation	(b) The equation $x^2 - 6x + 2 = k$ has only	
$3x^2 + (k+1)x + 12 = 0$ only has one root.	one solution. Find k	
CALCULUS You need to get these right for Merit level		

<u>CALCULUS</u> You need to get these right for Merit level Ouestion ONE

(b) Find the minimum y value of the curve $y = 3x^2 - 12x + 5$

Question TWO	
(a) Find the equation of the tangent to the curve $y = x^3 - 8x$ at the point where $x = 2$	(b) For what values of x is the curve $y = \frac{x^3}{3} - 2x^2 - 5x$ a decreasing function?

Question THREE	
(a) The velocity of a model car at t secs is	(b) <i>The equation of a curve is</i> $y = x^2 + ax + b$
v = 5 + 2t. Find how far the car will move in	and it passes through (1, 8).
the 3^{rd} second (from $t = 2$ to $t = 3$)	If the gradient at $x = 1$ is 6, find a and b.