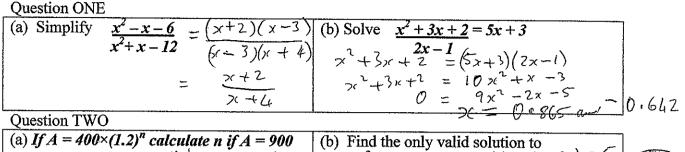
MERIT QUESTIONS ON A TYPICAL NCEA PAPER. (A) ALGEBRA

Question ONE



Question TWO

		(b) Find the only valid	solution to]
900 = 400 × 1-2"			(x'-4)(x-2)=3	6 + 4
2.25 = 1.2"	n = loz 2.25	<i>x</i> – 4	(x-4) x = 2 = 5	
lag 2.25 = lag 1.2"	- 4°48		x = 7	

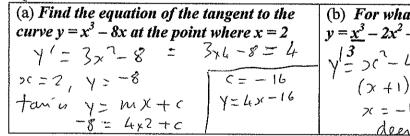
Onestion THREE

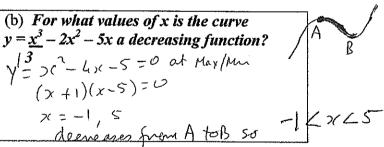
(a) Find k if the equation		(b) The equation $x^2 - 6x + 2 = k$ has only		
$3x^2 + (k+1)x + 12 = 0$ only has one root.		one solution. Find $k \times (2-1) = 0$		
A = 0	$(K+1)^2 = 144$	1 = 0 so 36-4.(2-14) = 0		
(K+1)2-4x3x12=0	K+1=12 or K-1==	12 36 = 4(2-14) 416= 7	8	
,	K=11 or K=-13	36 = 8-4K K=	7	

CALCULUS

Question ONE		
(a) The height of a ball kicked vertically up	(b) Find the minimum y value of the curve	
is $h = 40t - 5t^2$. Find the greatest height the	$v = 3x^2 - 12x + 5$	
ball will reach. $V = \frac{dh}{dt} - 40 - 10t = 0$ $t = 4$	Y'= 6x -12 = 0 of Min	
t=4	2 = Z	
Subt=4 h=80 m	Y = 12-24 +5 = -7	

Ouestion TWO





Question THREE

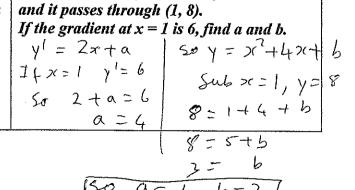
(a) The velocity of a model car at t secs is
$$v = 5 + 2t$$
. Find how far the car will move in the 3^{rd} second (from $t = 2$ to $t = 3$)
$$\frac{dx}{dt} = \sqrt{-5} + 2t$$

$$2c = 5t + t^{2} + c$$

$$t = 2 \text{ so } 2c_{1} = 10 + 4 + c$$

$$t = 3 \text{ so } 2c_{2} = 15 + 9 + c$$

$$= 24 + c$$



(b) The equation of a curve is $y = x^2 + ax + b$