



NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA



National Certificate of Educational Achievement
TAUMATA MĀTAURANGA Ā-MOTU KUA TAEA

MATHEMATICS with CALCULUS

Level 3

90635 Differentiate and use derivatives to solve problems

Credits: Six

Answer ALL questions in the spaces provided in this booklet.

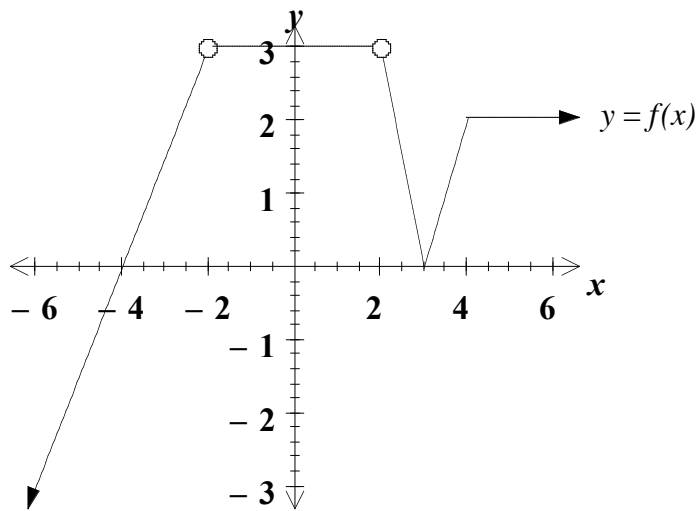
Show ALL working for ALL questions.

Check that this booklet has pages 2–8 in the correct order and that none of these pages is blank.

YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.

<i>For Assessor's use only</i>		
Achievement Criteria		
Achievement	Achievement with Merit	Achievement with Excellence
Differentiate functions and use differentiation to solve problems.	Demonstrate knowledge of concepts and techniques of differentiation. Solve differentiation problems.	Solve problem(s) involving a combination of differentiation techniques.
Overall Level of Performance		

QUESTION FIVE



From the graph of $f(x)$ state:

(a) $\lim_{x \rightarrow 2} f(x)$

(b) For what value(s) of x is $f'(x) = 0$?

(c) For what value(s) of x is the graph not differentiable?
