



For Supervisor's use only

3

90639



NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA



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

Level 3 Calculus, 2004

90639 Sketch graphs and find equations of conic sections

Credits: Three

9.30 am Tuesday 23 November 2004

Check that the National Student Number (NSN) on your admission slip is the same as the number at the top of this page.

Make sure you have a copy of the Formulae and Tables booklet L3-CALCF.

You should answer ALL the questions in this booklet.

Show ALL working for ALL questions.

If you need more space for any answer, use the pages provided at the back of this booklet and clearly number the question.

Check that this booklet has pages 2–12 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.

Achievement Criteria		<i>For Assessor's use only</i>	
Achievement		Achievement with Merit	Achievement with Excellence
Sketch graphs of conic sections.	<input type="checkbox"/>	Solve problems involving conic sections.	<input type="checkbox"/>
Find equations of conic sections from given information.	<input type="checkbox"/>		<input type="checkbox"/>
Overall Level of Performance (all criteria within a column are met)			<input type="checkbox"/>

You are advised to spend 40 minutes answering the questions in this booklet.

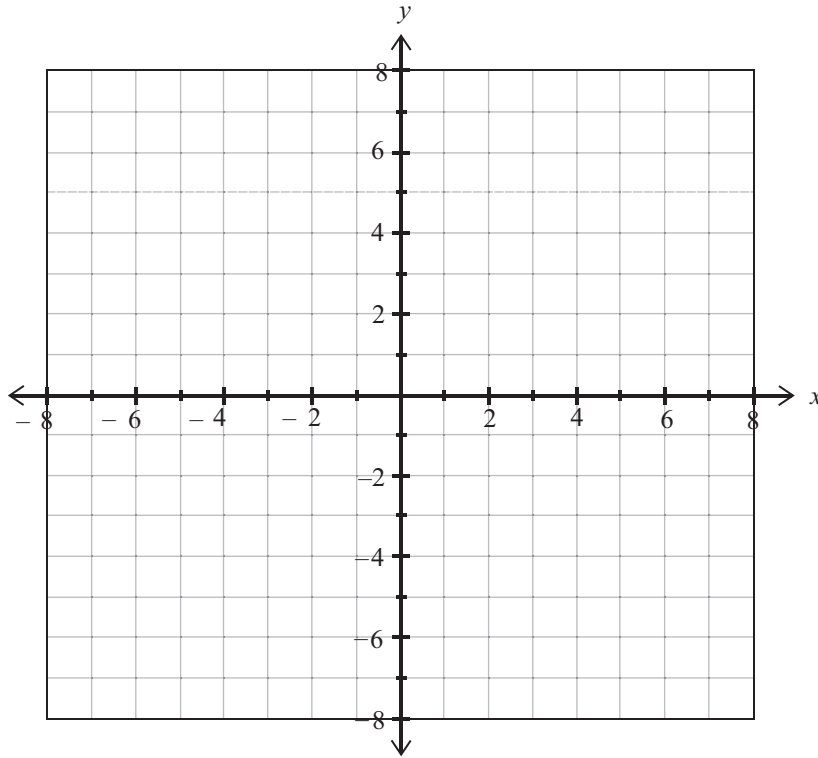
Show **ALL** working.

QUESTION ONE

Sketch the graph of $\frac{x^2}{4} - \frac{y^2}{9} = 1$.

Label any intercepts and any asymptotes.

*If you need to
redraw this graph,
use page 11.*

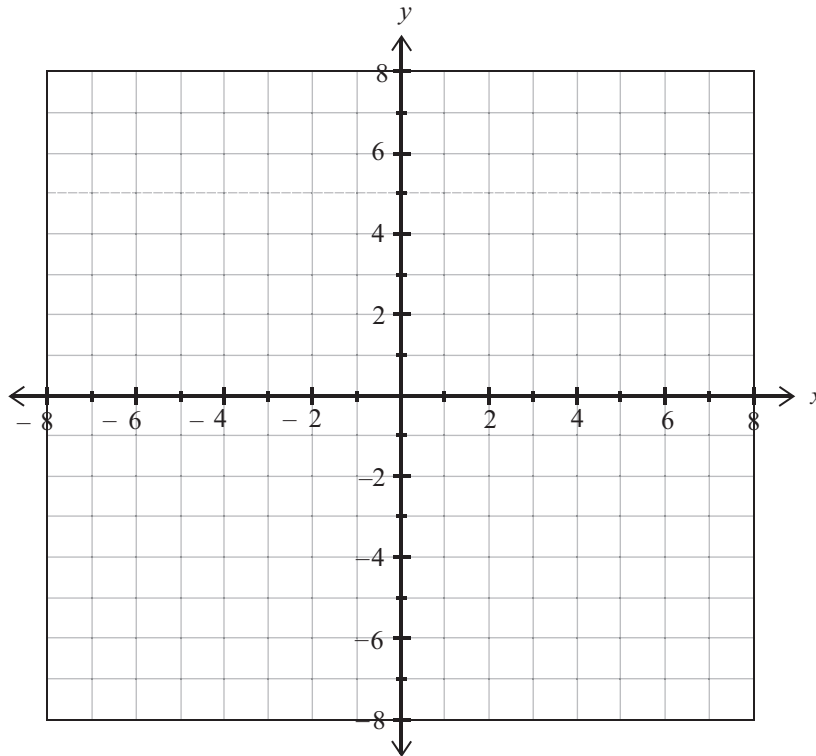


QUESTION TWO

Sketch the graph of $x^2 + y^2 - 4x + 6y + 9 = 0$.

Label any intercepts and any asymptotes.

*If you need to
redraw this graph,
use page 11.*



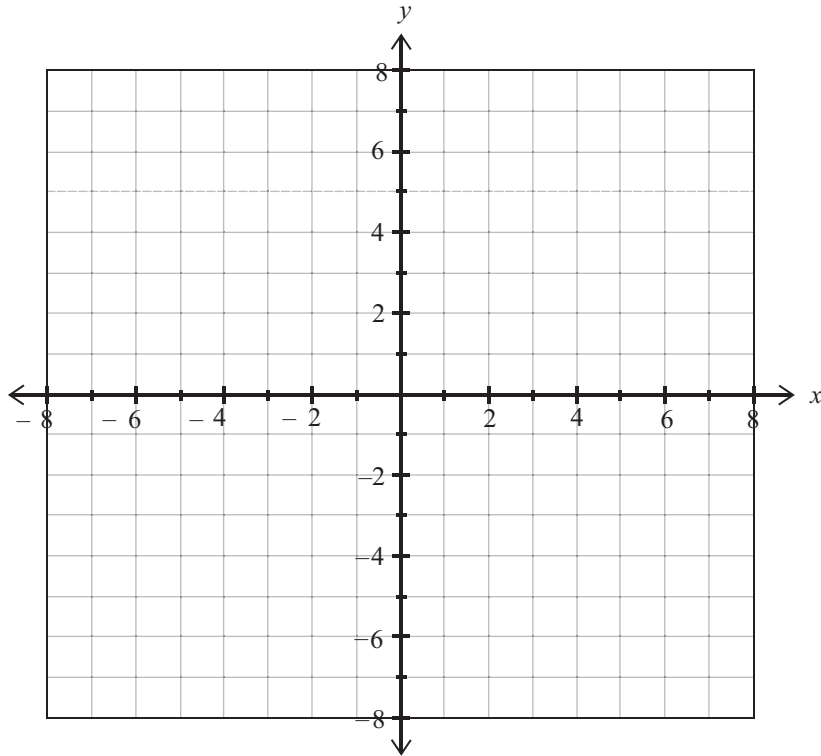
QUESTION THREE

Sketch the graph of the curve defined parametrically by

$$x = 5 \cos \theta \text{ and } y = 3 \sin \theta.$$

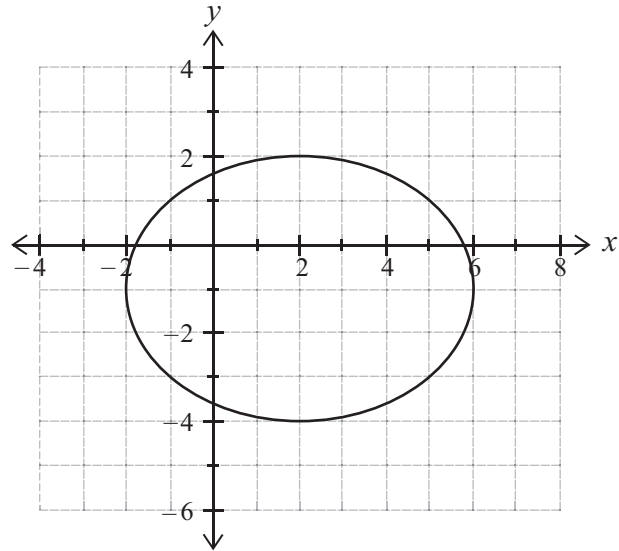
Label any intercepts and any asymptotes.

*If you need to
redraw this graph,
use page 11.*

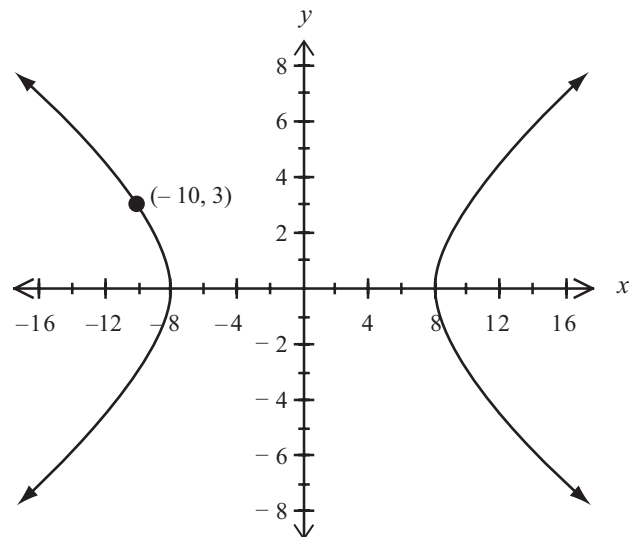


QUESTION FOUR

(a) Find the equation of the conic section shown:



(b) Find the equation of the conic section shown:



(c) Find the equation of the conic section shown:

