



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

2008

Internal Assessment Resource

Subject Reference: **CAS Mathematics 2.4**

Internal assessment resource reference number:
Maths/2/4_A1

Supports internal assessment for:

Achievement Standard: 90809

Title: Demonstrate understanding of straightforward mathematical processes

Credits: 5

Date version published:

May 2008

**Ministry of Education
quality assurance status**

For use in internal assessment
from 2008

Teacher Guidelines:

The following guidelines are supplied to enable teachers to carry out valid and consistent assessment using this internal assessment resource.

The assessment schedule must be adapted to include the evidence that is expected from the candidates.

Context/setting:

The questions within this assessment are in general in a mathematical context.

Conditions:

Time allocation - this activity should be able to be completed within 1 period of 50 to 60 minutes. Electronic technology may not be used in the assessment of this standard.

Resource requirements:

Level 2 Mathematics formula sheet.

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Supports internal assessment for:

Achievement Standard 90809

Demonstrate understanding of straightforward mathematical processes.

Credits: 5

Student Instructions Sheet

Electronic technology may not be used in this assessment task.

QUESTION ONE

Write $2 \log 3 + \log 5$ as the log of a single whole number.

QUESTION TWO

Solve $4x^2 - 7x = 2$

QUESTION THREE

If $f(x) = 6x^2 + 5x - 2$

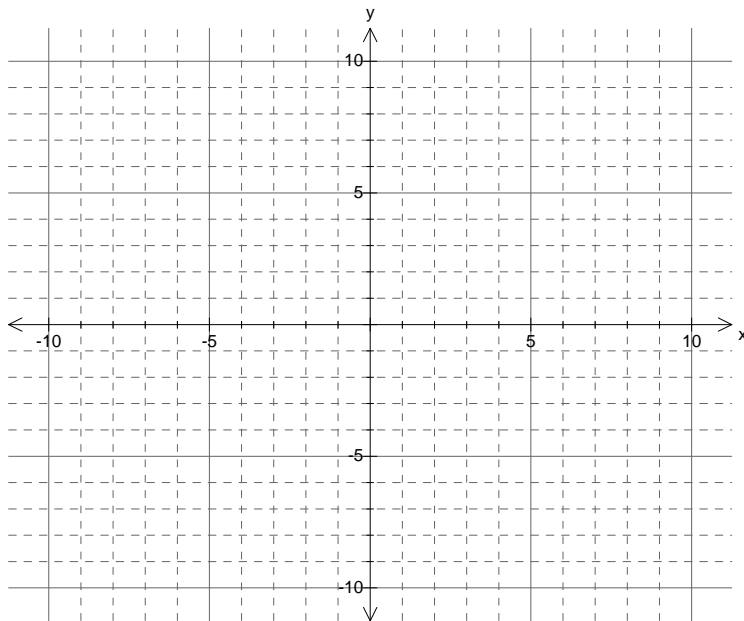
Find $f'(x)$

QUESTION FOUR

The graph of $f(x) = (x + 3)^2 - 2$ is translated a units to the right.
Give the equation of the new graph.

QUESTION FIVE

Sketch the graph of $x^2 + y^2 = 16$ on the axes below.



QUESTION SIX

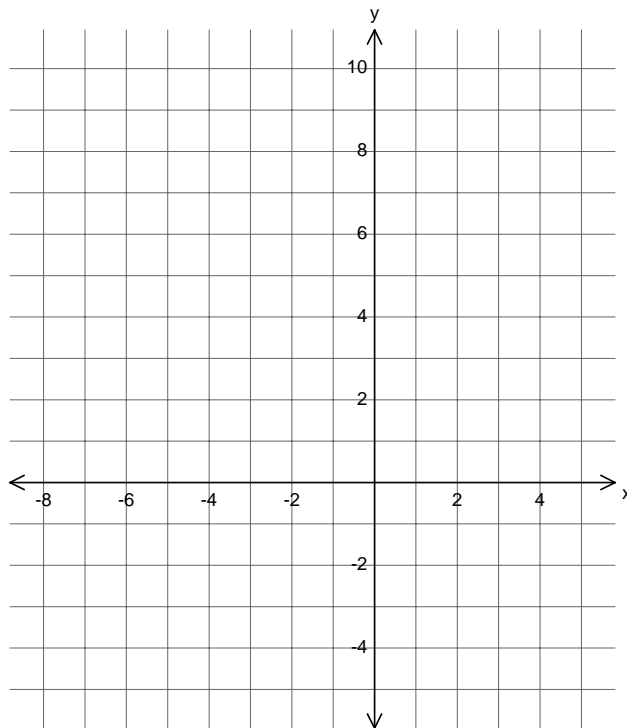
Rewrite $\frac{x^2y - xy^2}{3(x - y)}$ in its simplest form.

QUESTION SEVEN

Find the area between the x axis and the curve $y = x(x - 2)$

QUESTION EIGHT

Sketch the graph of $y = 2^{x+3}$ on the axes below.



QUESTION NINE

Solve $\frac{(m-1)}{(m-3)} + \frac{m+3}{2m} = \frac{2}{m}$

You must show your working. (Evidence of algebraic manipulation.)

QUESTION TEN

Find the area between the line $y = x$ and the parabola $y = x^2 + 4x + 2$.

QUESTION ELEVEN

Give the values of a so that the equation $x^2 + ax + 9 = 0$ has 2 solutions. Explain your answer.

Assessment Schedule CAS Maths/2/4 – A1

Question	Evidence	Achieved Demonstrate the ability to use straightforward mathematical processes.	Merit Demonstrate the ability to use mathematical processes.	Excellence Demonstrate the ability to use mathematical skills to solve problems.
1		Simplified correctly		
2		Solved correctly. Both solutions.		
3		Derivative correct		
4		Equation correct		
5		Graph correct		
6		Top line factorised	Fully simplified	
7		Integral found without substitution. Omission of c ignored	Area calculated -accept numerical error	
8		Graph drawn with an error in one feature	Graph correctly drawn	
9		LHS simplified	Accept 1 algebraic error in solution	Equation solved – may contain a numerical error
10		Points of intersection found Integral found without substitution for either graph	Integral found with substitution for either graph	Area found – accept numerical error
11		Indication that for equal solutions $a = 6$ (or -6)	Progress towards solution	Fully explained solution
Sufficiency:		4 satisfied	3 satisfied or achievement and 2 satisfied	3 satisfied or merit plus 2 satisfied

Examples of acceptable statements must be included in the evidence column of the schedule.

The standard is written in such a way that if a student satisfies the criterion for a grade then they have automatically have satisfied the criteria for the lower grades. This means that if a student have satisfied the excellence requirements for questions 9, 10 and 11, there is no need to check the evidence for the other questions – they will be awarded excellence. The same argument applies for the ward of merit.