



THE UNIVERSITY
OF QUEENSLAND

VENUE:

SEAT NUMBER:

STUDENT NUMBER:

FIRST NAME:

LAST NAME:

St Lucia Campus

Internal

FINAL EXAMINATION

Summer Semester, 2007

SAMPLE EXAM - MATH1040 - Basic Mathematics

PERUSAL TIME 10 minutes. During perusal, write only on the scrap paper provided

WRITING TIME 120 minutes

EXAMINER Mr Michael Jennings

NO. OF PAGES (*include title page and attachments*) 22 Pages - Single-Sided

Exam Type: Closed Book - Specified materials permitted

Permitted Materials: Calculator - Yes - Non-programmable calculators only
Dictionary - Yes - Bilingual Dictionary only
Other – No electronic aids are permitted (e.g. laptops, phone)
Pens, pencils, rubbers, rulers etc

Answer: On examination paper in spaces provided

Number of Questions: 18

Weighting/Marks: 50% - 120 marks
All questions carry the indicated number of marks.

Special Instructions: Students must comply with the General Award Rules 1A.7 and 1A.8 which outline the responsibilities of students during an examination.
The last page is a formulae sheet. You may detach this page.

1. VARIOUS SHORT ANSWER 10 parts, worth 1 mark each.
 - a) p80 Q3a, p85 Q2a, p91 Q3a, p98 Q6a, p114 Q1a, p120 Q1a
 - b) p80 Q1, p85 Q1, p91 Q1, p114 Q1c
 - c) p79 Q6, p84 Q10, p90 Q19
 - d) p79 Q5, p84 Q5, p90 Q3
 - e) operations on numbers, power laws etc
 - f) p90 Q 30, 31, 32
 - g) p114 Q4c, p120 Q1d
 - h) i) j) p114 Q1d, p120 Q1e, f, g
2. DOMAIN AND RANGE 3 parts, worth 2 marks each. p114 q2, p120 Q4
3. EQUATION OF LINE 2 parts, worth 3 marks each. p114 Q3a, p120 Q3, p126 Q5, p132 Q8
4. SOLVING EQUATIONS 2 parts, worth 3 marks each. p81 Q7, p86 Q6, p86 Q11, p114 Q4
5. MATCHING GRAPHS 8 parts, worth 1 mark each. p114 Q5, p120 Q2, p127 Q12, p133 Q13, p139 Q13
6. SURDS 2 parts, worth 4 marks, 3 marks. p91 Q2, p115 Q6, p120 Q5
7. POWERS 4 marks. p81 Q9, p86 Q10, p97 Q4, p115 Q8, p121 Q7
8. COMPOSITION OF FUNCTIONS 2 parts, worth 2 marks, 3 marks. p115 Q9, p121 Q8
9. SIGMA (SUMMATION) NOTATION 4 marks. p81 Q12, p115 Q11b, p121 Q11
10. COMPOUND INTEREST 6 marks. p115 Q10, p121 Q9, p128 Q15
11. DERIVATIVES 4 parts, worth 2 marks, 4 marks, 4 marks, 3 marks. p115 Q12, p120 Q1h, p121 Q13, p127 Q10, 11, p133 Q10, p138 Q10
12. CRITICAL POINTS 7 marks. p115 Q13, p121 Q14, p149 Q12
13. TANGENT LINES 4 marks. See your lecture notes
14. INTEGRALS 4 parts, worth 1 mark, 2 marks, 4 marks, 5 marks. p116 Q14, p121 Q15, p128 Q14, p134 Q15, p140 Q15, p145 Q18
15. ROCKETS 2 parts, worth 2 marks, 4 marks. p116 Q15, p128 Q13, p150 Q16
16. DERIVATIVES 2 parts, worth 3 marks, 4 marks. p116 Q16, p122 Q17, p140 Q16
17. Mystery question involving simultaneous equations. 5 marks
18. Mystery question involving functions and derivatives. 4 marks

This sample exam shows you what to expect on your real exam. The number of marks for each question is shown, along with some practice questions from your Study Guide which cover the same topic. Note that the Study Guide contains worked solutions to all of the questions. Your exam has the same cover sheet as this and has the same formulae at the end. I think this is a very useful study guide!

Have you read p78 of the Study Guide??

MATH1040 — Basic Mathematics
Summer Semester Examination, February 2008 (continued)

Formulae Sheet:

Distance between (x_1, y_1) and (x_2, y_2) : $d = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$

Roots of $ax^2 + bx + c = 0$ are: $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

Product rule: $(uv)' = u' \cdot v + u \cdot v'$

Chain rule: $\frac{dy}{dx} = \frac{dy}{du} \cdot \frac{du}{dx}$

Quotient rule: $\left(\frac{u}{v}\right)' = \frac{u' \cdot v - u \cdot v'}{v^2}$

Compounding interest: if \$P is invested for t time periods at an interest rate of r per period then the final balance F is given by:

$$F = P(1 + r)^t$$

Continuously compounding interest: if \$P is invested for t years at an interest rate of r per annum, compounding continuously, then the final balance F is given by:

$$F = Pe^{rt}$$