Year 11 Mathematics Ext 1 (3U)
PRELIMINARY ASSESSMENT TASK 1
TERM 1, Week 5, 2003

Name: _____

Teacher: _____

Set By: LT

Friday 28 February 2003

- Attempt **ALL** questions.
- Marks may be deducted for insufficient, or illegible work.
- Only Board approved calculators (**excluding** graphic calculators) may be used.
- Total possible mark is **36**.
- Begin each question on a new sheet of paper.
- **TIME ALLOWED:** 45 minutes

Question 1: **(Start on a new page)** **(10 marks)**

Factorise fully:

(a) $z^4 - 8z$ **[2]**

(b) $9x^2 - 4y^2 - 9x - 6y$ **[3]**

(c) Expand and simplify:

$$\left(x + \frac{1}{x}\right)^2.$$ **[2]**

(d) Evaluate $a^2 + \frac{1}{a}$, where $a = 2 - \sqrt{3}$, leaving your answer in its simplest surd form. **[3]**

Question 2: **(Start on a new page)** **(8 marks)**

(a) Use index laws to simplify $32^{\frac{-3}{5}}$ and leave your answer as a simplified fraction. **[2]**

(b) Simplify as far as possible:

$$\frac{64}{(4^n)^6 \times 16^{1-2n}}.$$ **[3]**

(c) Evaluate $\frac{a^4 b^5}{a^2 b^7}$ as a fraction in its simplest index form, when $a = \left(\frac{3}{7}\right)^3$ and $b = \left(\frac{5}{7}\right)^6$. **[3]**

Question 3: **(Start on a new page)** **(11 marks)**

(a) Solve $|x+3| = 2x-1$. **[3]**

(b) Solve $27^{2x-1} = \frac{1}{\sqrt{3}}$. **[2]**

(c) Solve $x^2 + 3x - 28 > 0$. **[2]**

(d) Solve $\frac{3}{x+4} \geq 2$ **[4]**

Question 4: **(Start on a new page)** **(7 marks)**

Solve the following equations simultaneously:

(a) $y - 2x = 1$ **[3]**
$x^2 + y^2 = 10$.

(b) $x + y + z = 6$ **[4]**
$2x - y + z = 1$
$x + y - 2z = -9$.

END OF TASK