UNIVERSITY OF SASKATCHEWAN
Department of Mathematics & Statistics
Mathematics 101.3 Quiz #1

October 4, 2000 Time:50 minutes Instructor: *Doug MacLean*

CLOSED BOOK — NO CALCULATORS PERMITTED

Each question is worth 4%

The possible answers to all questions are the digits in the **ANSWER SET:**

(A) 0 (B) 1 (C) 2 (D) 3 (E) 4 (F) 5 (G) 6 (H) 7 (I) 8 (J) 9

If $\frac{5}{7} - \frac{3}{5}$ is written in its simplest form as $\frac{a}{10b + c}$, where a, b, and c are digits, then

(1) $a =$ **(2)** $b =$ **(3)** $c =$

$x^2 + 16x + 70$ is to be written in the form $(x + a)^2 + b$ by completing squares. We must have:

(4) $a =$ **(5)** $b =$

$5x^2 + 30x + 40$ is to be written in the form $a[(x + b)^2 - c]$ by completing squares. We must have:

(6) $a =$ **(7)** $b =$ **(8)** $c =$

If $a = \left[(x+1)^{\frac{1}{6}}\right]^3 - (x+1)^{\frac{1}{2}}$, then **(9)** $a =$

If $x = 9$ and $h = 1$, then **(10)** $\left(\frac{x+h}{x-h}\right)^{-\frac{2}{3}} \cdot \frac{x+h}{\sqrt[3]{x^2 - h^2}} =$

....over

If $a = 4$, then **(11)** $3\dfrac{\left(\frac{4a^3}{9}\right)^{\frac{1}{2}} - \frac{2}{3}\sqrt{a}}{a-1} =$

The roots of $4x^2 - 2x - 1 = 0$ in their simplest form are $\dfrac{A \pm \sqrt{B}}{C}$. We must have:

(12) $A =$ **(13)** $B =$ **(14)** $C =$

The polynomial $p(x) = 6x^4 + x^3 - 7x^2 - x + 1$ can be factored in the form $(x-a)(x+b)(cx+1)(dx-1)$, where a, b, c, and d are digits. Their values are:
(15) $a =$ **(16)** $b =$ **(17)** $c =$ **(18)** $d =$

$\dfrac{2\sqrt{3} - \sqrt{2}}{\sqrt{3} + \sqrt{2}}$ can be simplified to the expression $a - b\sqrt{c}$, where a, b, and c are digits. Their values are:

(19) $a =$ **(20)** $b =$ **(21)** $c =$

The inequality $8 - 5x < 2$ has solution of the form $\left(\dfrac{a}{b}, \infty\right)$, where a and b are positive digits.
The values of a and b are:

(22) $a =$ **(23)** $b =$

If we solve the inequalities $-2 \le \dfrac{3-x}{2} \le 2$, the solution is an interval $[-a, b]$, where a and b are positive digits.
The values of a and b are:

(24) $a =$ **(25)** $b =$
