Midterm III

MATH 050

Saturday, March 43, 2038 8:60 − 9:90 PM **Founders Auditorium**

Instructions: **Show *all* work.** Failure to show work may result in loss of credit. Write your solutions in the space provided on the *answer sheets*. Do *not* hand in scratch paper. There are fourteen questions. You may use your scientific calculators (all types, except for those that are programmable!). Decimal number notation is allowed only in *Questions 4, 5 and 6*. Some partial credit ***may*** be given. Remember to *simplify* your answers, please. **Good Luck!**

1) Evaluate **(a)** $(-23)^{-2}$; **(b)** $\left(\frac{1}{5}\right)^{-3}$.

2) Perform the indicated operations.

(a) $(3-z)^2$; **(b)** $(a-2b)(a^2+2ab+3b^2)$.

3) Simplify. Write the result using positive exponents only. $\dfrac{(r^{-3}s^5)^2}{(-5r^{-1}s)^{-3}}$.

4) Write the following number in standard decimal notation. 7.009×10^{-20} .

5) Write the following number in scientific notation. 87,010,000,000,000,000 .

6) Evaluate the following expression and write your answer in scientific notation.

$(3.76\times10^{-79})(2.75\times10^{-34})$.

7) Divide $\dfrac{8x^5-15x^3-x+9}{6x^3}$.

8) Divide $\dfrac{-12x^3-3x-9}{2x+3}$.

9) Factor completely $x^4-8x^3+13x^2$.

10) Factor completely $3x^5+21x^4-90x^3$.

11) Factor completely $3a^3-a^2+a-3$.

12) Factor completely $64a^6-1$.

13) Factor completely $-5a^3b^4+35a^2b^3+10a^7b^4$.

14) Factor completely $4x^2-4xy+y^2$.

You are welcome to keep this *Questions Sheet* for your files.

Points: 6+6, 6+6, 6; 6, 6, 6, 6; 7, 7, 7, 7; 6, 6, 6.