MEMORIAL UNIVERSITY OF NEWFOUNDLAND

DEPARTMENT OF MATHEMATICS AND STATISTICS

ASSIGNMENT 1 **MATH 2050** DUE: MAY 17, 2007

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1. Find all solutions for the following linear equation by writing the solution in parametric form. How many parameters are in the solution?

   (a) $27x + 54y = 81$

   (b) $27x + 81 = 0$

   (c) $x - 2y + 3z - 4w + 5v - 6u = 7$

   (d) $\sum_{k=1}^{n} kx_k = n^2$, where $n \geq 2$.

2. Solve each of the systems algebraically and geometrically (or argue that it does not have a solution). Write the augmented matrix corresponding to each of the systems.

   (a) $x - 3y = 5$
   $2x + y = 1$

   (b) $x - 2y = 6$
   $y + 1 = 0$
   $x - 4 = 0$

   (c) $2x + y = 3$
   $6x + 3y = 9$
   $10 - 4y = 8x$

   (d) $2x + 4y = 6$
   $10y + 5x = 15$

3. Write a linear system corresponding to the given augmented matrix.

$$\left[\begin{array}{cccc|c} -5 & 2 & -3 & 4 & 1 \\ 0 & -10 & 0 & 1 & -100 \end{array}\right]$$

4. Give an example of a system of four linear equations in two variables that has a unique solution.

5. Margo needs 200mg of vitamin A, 100mg of vitamin D, and 140mg of vitamin E per week. She has three supplements: the first contains 20% vitamin A, 20% vitamin D and 20% vitamin E; the second contains 10% vitamin A, 30% vitamin D and 40% vitamin E; the third contains 50% vitamin A, 10% vitamin D and 20% vitamin E. How much of each supplement should she eat each week?

6. Compose your own word problem that requires solution of a system of linear equations. Solve the problem.