

UNIVERSITY OF REGINA  
DEPARTMENT OF MATHEMATICS AND STATISTICS  
MATH 122 200610 Quiz 2 (B Version)

Time: 30 minutes

Instructor: Dr. Edward Doolittle

Name: \_\_\_\_\_

Student #: \_\_\_\_\_

(marks) Please do questions 1 and 2. You have 10 minutes to do each question, and 10 minutes to check your work, for a total of 30 minutes for the quiz. A non-programmable calculator is allowed but is not necessary. You may leave early if you can do so without disturbing any of your colleagues. If you finish early, I suggest you check your work thoroughly and then give question 3 a try.

(10) 1. Find  $\mathbf{b}$  such that the equation  $A\mathbf{x} = \mathbf{b}$  does not have a solution, where

$$A = \begin{bmatrix} 0 & 5 & -2 \\ -4 & 2 & -7 \\ -8 & -11 & -8 \end{bmatrix}, \quad \mathbf{b} = \begin{bmatrix} b_1 \\ b_2 \\ b_3 \end{bmatrix}.$$

Describe the set of all  $\mathbf{b}$  for which the equation *does* have a solution.

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- (10) 2. Describe all solutions to the equation  $A\mathbf{x} = \mathbf{b}$  in parametric form where

$$A = \begin{bmatrix} 1 & 3 & 1 \\ -3 & -6 & 3 \\ 4 & 9 & -2 \end{bmatrix}, \quad \mathbf{b} = \begin{bmatrix} -1 \\ 0 \\ -1 \end{bmatrix}.$$

- (0) 3. *Something to amuse you if you finish early.* Balance the chemical reaction

