

UNIVERSITY OF REGINA  
DEPARTMENT OF MATHEMATICS AND STATISTICS  
MATH 122 200610 Quiz 4 (A 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.

(10) 1. Let  $A$  and  $B$  be  $3 \times 3$  matrices. If  $\det A = 4$  and  $\det B = -3$ , evaluate the following expressions.

(a)  $\det AB$

(c)  $\det A^3$

(e)  $\det(B^T B)^{-1} B^T$

(b)  $\det 3B$

(d)  $\det A^T B^{-1}$

- (10) 2. Use determinants to decide whether the following vectors are linearly independent.

$$\begin{bmatrix} 1 \\ -2 \\ 3 \\ 1 \end{bmatrix}, \begin{bmatrix} 3 \\ -5 \\ 5 \\ -1 \end{bmatrix}, \begin{bmatrix} 0 \\ 7 \\ 2 \\ 2 \end{bmatrix}, \begin{bmatrix} 2 \\ 4 \\ 1 \\ -3 \end{bmatrix}$$