CONCORDIA UNIVERSITY

Department of Mathematics & Statistics

MATH 204/2 all sections except EC: - Vectors and Matrices Midterm - Sunday, October 19, 2014 (1h30min)

Only approved calculators are permitted.

Justify all your answers.

1. Solve by using the Gauss-Jordan elimination

$$3x_1 + 2x_2 + 3x_3 - 2x_4 = 1$$

 $x_1 + x_2 + x_3 = 3$
 $x_1 + 2x_2 + x_3 - x_4 = 2$

2. Determine the values of a for which the system has no solutions, exactly one solution, or infinitely many solutions

3. If
$$(5I - 2A)^{-1} = \begin{pmatrix} 4 & 11 \\ 1 & 3 \end{pmatrix}$$
, find A.

4. Find the inverse of
$$A = \begin{pmatrix} 1 & 0 & 1 \\ 0 & 1 & 1 \\ 1 & 1 & 0 \end{pmatrix}$$
.

5. Find the determinant of
$$A = \begin{pmatrix} 3 & 3 & 0 & 5 \\ 2 & 2 & 0 & -2 \\ 4 & 1 & -3 & 0 \\ 2 & 10 & 3 & 2 \end{pmatrix}$$
.

6. Solve by Cramer's rule only

The present document and the contents thereof are the property and copyright of the professor(s) who prepared this exam at Concordia University.

No part of the present document may be used for any purpose other than research or teaching purposes at Concordia University. Furthermore, no part of the present document may be sold, reproduced, republished or re-disseminated in any manner or form without the prior written permission of its owner and copyright holder.