

# MEMORIAL UNIVERSITY OF NEWFOUNDLAND

## DEPARTMENT OF MATHEMATICS AND STATISTICS

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SECTION 2.2

Math 2050 Worksheet

WINTER 2013

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**For practice only. Not to be submitted.**

1. Find the inverse of each of the following matrices, or explain why the matrix is not invertible.

(a)  $A = \begin{bmatrix} 2 & -5 \\ 1 & -3 \end{bmatrix}$

(b)  $B = \begin{bmatrix} 0 & -3 \\ -2 & 6 \end{bmatrix}$

(c)  $C = \begin{bmatrix} -1 & 3 \\ -3 & 9 \end{bmatrix}$

2. Determine whether each of the following pairs of matrices are inverses.

(a)  $A = \begin{bmatrix} -6 & 8 & 9 \\ 1 & -1 & -1 \\ -3 & 4 & 5 \end{bmatrix}$  and  $B = \begin{bmatrix} 1 & 4 & -1 \\ 2 & 3 & -3 \\ -1 & 0 & 2 \end{bmatrix}$

(b)  $A = \begin{bmatrix} 2 & 0 & 5 \\ 1 & -3 & 0 \end{bmatrix}$  and  $B = \begin{bmatrix} 3 & -\frac{5}{2} \\ 1 & -\frac{7}{6} \\ -1 & 1 \end{bmatrix}$

3. Suppose  $A$ ,  $B$ ,  $C$  and  $X$  are matrices,  $A$  and  $X$  are invertible, and  $A + BX^{-1} = CX^{-1}$ . Find an expression for  $X$  in terms of  $A$ ,  $B$  and  $C$ .
4. Prove that  $(XYZ)^T = Z^T Y^T X^T$  for matrices  $X$ ,  $Y$ ,  $Z$ .