CONCORDIA UNIVERSITY

Department of Mathematics & Statistics

MATH 204/4 all sections except EC: - Vectors and Matrices Midterm - Winter 2019 (1h30min)

Only approved calculators are permitted.

Justify all your answers.

All questions have equal value.

1. Find the inverse of the matrix
$$A=\left(\begin{array}{ccc}1&3&-4\\1&5&-1\\3&13&-6\end{array}\right).$$

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

3. Find determinant A where
$$A = \begin{pmatrix} 1 & 2 & 2 & 3 \\ 1 & 0 & -2 & 0 \\ 3 & -1 & 1 & -2 \\ 4 & -3 & 0 & 2 \end{pmatrix}$$

4. Solve by Cramer's rule only

$$3x - 2y + z = 1$$

 $x - 7y + 2z = 2$
 $2x + 4y + 4z = 3$

5. If
$$AX = B$$
 where $A = \begin{pmatrix} 1 & 2 & 3 \\ 3 & 4 & 5 \\ 6 & 7 & 8 \end{pmatrix}$ and $B = \begin{pmatrix} 1 & 2 \\ 1 & 1 \\ 1 & 4 \end{pmatrix}$, find X .

6. Find the determinant of
$$A = \begin{pmatrix} 1 & a & b+c \\ 1 & b & c+a \\ 1 & c & a+b \end{pmatrix}$$
.

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