

Math 265 Quiz#1: 1.1-1.4

For **Division 7, Section 3:**

Given a system

$$\begin{aligned}5x_1 + 6x_2 &= 6 \\ 4x_1 + 5x_2 &= 2\end{aligned}$$

we can write it in matrix form

$$A \cdot X = B,$$

where

$$A = \begin{bmatrix} 5 & 6 \\ 4 & 5 \end{bmatrix}, \quad B = \begin{bmatrix} 6 \\ 2 \end{bmatrix}.$$

1. **5 points.** Find the inverse of A .
2. **5 points.** Solve the systems.

SOLUTION.

1. **5 points.** The inverse is

$$A^{-1} = \begin{bmatrix} 5 & -6 \\ -4 & 5 \end{bmatrix}.$$

2. **5 points.**

$$X = A^{-1} \cdot B = \begin{bmatrix} 5 & -6 \\ -4 & 5 \end{bmatrix} \cdot \begin{bmatrix} 6 \\ 2 \end{bmatrix} = \begin{bmatrix} 18 \\ -14 \end{bmatrix} \implies x_1 = 18, \quad x_2 = -14.$$

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For **Division 8, Section 2:**

Given a system

$$\begin{aligned}3x_1 + 7x_2 &= 1 \\4x_1 + 9x_2 &= 2\end{aligned}$$

we can write it in matrix form

$$A \cdot X = B,$$

where

$$A = \begin{bmatrix} 3 & 7 \\ 4 & 9 \end{bmatrix}, \quad B = \begin{bmatrix} 1 \\ 2 \end{bmatrix}.$$

1. **5 points.** Find the inverse of A .
2. **5 points.** Solve the systems.

SOLUTION.

1. **5 points.** The inverse is

$$A^{-1} = \begin{bmatrix} -9 & 7 \\ 4 & -3 \end{bmatrix}.$$

2. **5 points.**

$$X = A^{-1} \cdot B = \begin{bmatrix} -9 & 7 \\ 4 & -3 \end{bmatrix} \cdot \begin{bmatrix} 1 \\ 2 \end{bmatrix} = \begin{bmatrix} 5 \\ -2 \end{bmatrix} \implies x_1 = 5, \quad x_2 = -2.$$

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