Name: MAT 281E
Number: **Homework 2** October 15, 2019

- **Prepare a report for this homework in PDF format using Word or Latex. The handwritten parts of the solutions must be present on white paper legibly and put in the appropriate places in the report after scanned clearly.**
- **Only one page should be used for each answer.**
- **Write your name and number at the top of the each page.**
- **No late submissions will be accepted.**
- **In Case of Cheating and Plagiarism Strong disciplinary action will be taken.**
- **For any questions about the homework, contact Büşranur Bülbül directly (office no: 4311) or via mail (bulbulb17@itu.edu.tr).**

  Submissions:Please submit your report through Ninova e-Learning System.Another way of submission will not be accepted.

Name: MAT 281E
Number: **Homework 2** October 15, 2019

1. (30 pts.) The matrices are given,

$$A = \begin{bmatrix} -1 & -2 & -3 \\ 0 & 3 & -1 \\ 0 & 4 & 2 \end{bmatrix}, B = \begin{bmatrix} -5 & 1 & 2 \\ -2 & 4 & 8 \\ -4 & -5 & -6 \end{bmatrix}$$

a) Evaluate det(A) and det(B) by cofactor expansion along the first column of the matrices.
b) Evaluate det(A) and det(B) using row reduction.

2. (20 pts.) Solve the lineer system by using Cramer's rule

$$\begin{aligned} x - 2y + z &= 7 \\ 3x - y + z &= -2 \\ 2x + 3y - 2z &= -10 \end{aligned}$$

3. (30 pts.) Evaluate the given expressions with

$$u = (3, -1, 2) \text{ , } v = (2, -3, 5) \text{ and } w = (1, 6, -2)$$

a) $||u + 2v||$
b) $||3v|| - ||2w||$
c) $||2u - v + 3w||$

4. (20 pts.) Find $u \cdot v$, $u \cdot u$ and $v \cdot v$

   a) $u = (2, 3, 1)$, $v = (3, 3, 0)$
   b) $u = (-2, -1, 0, -3, 1)$, $v = (2, 1, 3, 2, 4)$