Name: _____   **İTÜ ID:** _____   **Signature:** _____ **.**

BLG202E – Midterm Exam Part 1
Spring 2021, Duration: 45 minutes

**Instructions:**

- _Do NOT communicate with other people, including your friends, classmates, and family members!_
- _This is an open-book exam._
- _Give your answers in English._
- _Use an A4 paper for each question._
- _Write the question number, your Name and İTÜ ID on the top of each page and **sign all pages**._
- _Scan or take photo of your answers and upload them on Ninova within a a pdf file **before the deadline**!_
- _There will be no extension for time without penalty. There will be a late submission option for 10 mins where you will lose 3 points for each late minute. Your latest submission will be considered only._

National ID (university id for international students):

Create 3x3 matrix A by first 6 non-zero entries of your national ID, if your ID is 12034506789 matrix should look like:

1 2 3

4 5 6

7 8 9

If your Id does not have enough non-zero digits, you can use 9 for the missing entries.

Question 1 (25 points) :

Calculate LU decomposition of this matrix with partial pivoting, show each step clearly. Use your result to calculate x where Ax = b for b = (0 0 0).

Question 2 (25 points):

Use power method to find the dominant eigenvalue on matrix A. Use (1 0 0) as initial eigenvector guess. Make 3 iterations and report eigenvalue estimate for each iteration.