1. Guaranteed question:
   Let
   \[ A = \begin{bmatrix} \star \star \star \text{given, at most } 4 \times 4 \star \star \star \end{bmatrix} \]
   (a) Use Gaussian elimination without pivoting to factor \( A = LU \).
   (b) Use your \( LU \) factorization to solve
   \( Ax = \begin{bmatrix} \star \star \star \text{given } \star \star \star \end{bmatrix} \).
   (c) Use your \( LU \) factorization to find \( |A| \).
   (d) Is \( A \) diagonally dominant? positive definite? singular?

2. Likely questions:
   (a) Redo your factorization using pivoting.
   (b) Explain/justify/demonstrate why pivoting is necessary.
   (c) Derive the operation counts for \( LU \) decomposition.
   (d) Explain what a band matrix is, and why we care.

3. Math 446 students: Make sure you wrote your name on the test.
   Math 546 students: The book has the following theorem:
   \textbf{Theorem:} [**either Theorem 6.19 (without stability) or Theorem 6.21 **]
   Prove this theorem. If you use any other theorems from the book during your proof, then you need to state those theorems.