Quiz 5 (03-12-2018)   MATH 371, INTRODUCTION TO NUMERICAL COMPUTING
PREPARED BY DR. KAREEM ELGINDY

Question 1. [**1 mark**] For which real value of k is the system

$$\begin{cases} x + 2y = k, \\ 2x - ky = 4, \end{cases}$$

has no solution? Why?

Question 2. [**2 marks**] Consider the linear system

$$\begin{cases} 2x_1 + x_2 + x_3 = 4, \\ x_1 + 3x_2 + x_3 = 0, \\ x_1 - x_2 + 3x_3 = 6. \end{cases}$$

a) [1 mark] Solve the linear system using Gaussian elimination without partial pivoting.

b) [1 mark] Solve the linear system using the LU factorization of Doolittle's method.

Question 3. [**2 marks**] Consider the linear system

$$\begin{cases} x_2 + x_3 = 4, \\ x_1 + x_3 = 0, \\ x_1 - x_2 + 3x_3 = 6. \end{cases}$$

a) [1 mark] Perform two iterations only of Jacobi's method to solve the system.

b) [1 mark] Perform two iterations only of the method of Gauss-Seidel to solve the system.