**CHAPTER 5**

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| **Objective :** | Linear algebraic equations: Find the solution of the following set of linear algebraic equations as advised below.  x+2y +3z =1 3x+3y +4z =1 2x+3y +3z =2.  • Write the equation in matrix form and solve for x = [xyz]T using the left division \.  • Find the solution again using the function rref on the augmented matrix.  • Can you use the LU decomposition to ﬁnd the solution? [Hint: Since [LU]x = b, let [U]x = y, so that [L]y = b. Now, ﬁrst solve for y and then for x.] |
| **MATLAB**  **Code:** | A = [1 2 3 ;3 3 4 ;2 3 3 ];  b = [1 ;1 ;2];  x = A\b    C = [A b];  Cr = rref(C);  x = Cr(:,4)    [L,U] = lu(A);  x = b\[L\*U] |
| **Output:** | x =  -0.5000  1.5000  -0.5000  x =  -0.5000  1.5000  -0.5000  x =  -0.5000  1.5000  -0.5000 |