Please state all your assumptions and show all your work. Define your decision variables clearly. Briefly explain your constraints and objective functions. Define all units of measure (e.g., hours, $, $/hour, etc.) Explain what software package you used (e.g., LINDO, LINGO, EXCEL solver, etc.)For EXCEL solver, be sure to give a separate statement of the formulation /input.. Use an equation editor for the equations. If you cannot get one, then use subscripts to indicate indexing. Graphs should be detailed and easy to read.

Question : (To be solved using simplex method)

Consider the following linear programming problem:

$$\text{Min } 4x_1 + 3x_2 + 6x_3$$

s.t.

$$x_1 + 0.5x_2 + x_3 \geq 15$$

$$2x_2\ 0\ x_3 \geq 30$$

$$x_1 + x_2 + 2x_3 \geq 20$$

$$x_1, x_2, x_3 \geq 0$$

a) Write the dual problem.

a) Solve the dual.

b) Use the dual solution to identify the optimal solution to the original primal problem.

c) Verify that the optimal values for the primal and dual problems are equal.