Solve the linear programming using the simplex method:

1. Maximize Z = 10x1 + 6x2  
   subject to,  
   6x1 + 4x2 ≤ 80  
   4x1 + 6x2 ≤ 100  
   where x1, x2 ≥ 0
2. Maximize Z = 4x1 + 8x2  
   subject to,  
   x1 + 2x2 ≤ 5  
   x1 + x2 ≤ 4  
   where x1, x2 ≥ 0
3. Maximize Z = 6x1 + 7x2subject to,  
   x1 – x2 ≤ 12  
   x1 + 3x2 ≤ 18  
   where x1, x2 ≥ 0
4. Minimize Z = 6x + 8y  
   With subject to constraints,   
   4x + 3y ≥ 120  
   3x + 6y ≥ 120  
   Where x, y ≥ 0
5. Minimize Z = 60x1 + 80x2With subject to constraint,  
   x1 ≤ 400  
   x2 ≥ 200  
   x1 + x2 = 500  
   where x1, x2 ≥ 0
6. Minimize Z = 3x + 2y  
   with subject to constraint,  
   2x + 4y ≥ 10  
   4x + 2y ≥ 10  
   y ≥ 4  
   where x, y ≥ 0

**Answers**

1. x1 = 13.33, x2 = 0, Max(Z) = 133.33
2. x1 = 0, x2 = 5/2, Max(Z) = 20
3. x1 = 13.5, x2 = 1.5, Max(Z) = 91.5
4. x = 24, y = 8, Min(Z) = 208
5. x1 = 300, x2 = 200, Min(Z) = 34,000
6. x = 4, y = 1/2, Max(Z) = 13