1. Solve the following using the simple tableau. At the end of each problem, state clearly the optimal objective function value and the optimal solution point.  
(a) Maximize   
 subject to   
 

(b) Maximize   
 subject to   
 

(c) Minimize   
 subject to   
 

(d) Minimize   
 subject to



(e) Minimize   
 subject to



2. An oil refinery has available three different processes to produce gasoline. Each process produces varying amounts of three grades of gasoline: regular, unleaded, and premium. These amounts, in hundreds of gallons per hour of operation, are given in the following table, along with the cost in dollars of an hour’s operation of each of the processes.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | *Regular* | *Unleaded* | *Premium* | *Cost* |
| Process 1 | 3 | 4 | 2 | 160 |
| Process 2 | 6 | 6 | 8 | 400 |
| Process 3 | 6 | 3 | 4 | 300 |

Each week the refinery must produce at least 3600 gal of regular, 2000 gal of unleaded and 3000 gal of premium. Determine that operation of the refinery that satisfies these demands and minimizes costs. Find the solution using simplex method.