**SW Optimization camp 2020**

**Assignment #1**

(Due Fri. 3rd. Jul.)

**Guidelines**

1. Please submit via e-mail by the deadline (To: [wso1017@unist.ac.kr](mailto:wso1017@unist.ac.kr)).
2. Please set the title of e-mail as ‘SWcamp\_홍길동\_학번\_HW1’.
3. Please do NOT show your final answers only. Please show all your intermediate steps in your solutions to get full marks.

**Problem #1**

1. Formulate the model of Example 2 in ‘LP Modeling\_LAB’.
2. Derive the answer using cvxpy. Please attach the snapshots of your code and results.

**Problem #2**

1. Formulate the model of Example 4 in ‘LP Modeling\_LAB’.
2. Derive the answer using cvxpy. Please attach the snapshots of your code and results.

**Problem #3**

1. Formulate the model of Example 9 in ‘LP Modeling\_LAB’.
2. Derive the answer using cvxpy. Please attach the snapshots of your code and results.

**Problem #4**

Solve the following linear programs graphically.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| (a)   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | Minimize |  |  |  |  |  | | subject to |  |  |  |  |  | |  |  |  |  |  | 24 | |  |  |  |  |  | 5 | |  |  |  |  |  | 6 | |  |  |  | , |  | 0 | | (b)   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | Minimize |  |  |  |  |  | | subject to |  |  |  |  |  | |  |  |  |  |  | 12 | |  |  |  |  |  | 4 | |  |  |  |  |  | 8 | |  |  |  |  |  | 4 | |  |  |  | , |  | 0 | |
| (c)   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | Maximize |  |  |  |  |  | | subject to |  |  |  |  |  | |  |  |  |  |  | 16 | |  |  |  |  |  | 24 | |  |  |  |  |  | 12 | |  |  |  | , |  | 0 | | (d)   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | Maximize |  |  |  |  |  | | subject to |  |  |  |  |  | |  |  |  |  |  | 2 | |  |  |  |  |  | 10 | |  |  |  |  |  | 2 | |  |  |  | , |  | 0 | |

**Problem #5**

Which of the following sets are convex and which are not?