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Design Optimization HW 2

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**Problem 1**

**Problem 2**

**Problem 3**

**Given are two convex functions defined on the convex set X**

1. Prove that is a convex set of X

Let . Assume

1. In what conditions will be convex

**Problem 4**

**Show for a convex function and for**

**Problem 5**

1. Formulate this problem as an optimization problem.
2. Is your problem convex?
3. If we require the overall power output of any of the n lamps to be less than , will the problem have a unique solution?
4. If we require no more than half of the lamps to be switched on, will the problem have a unique solution?