

Discrete Optimization

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Name:

1 Assignment No. 1

Due: Wednesday, Sep. 15

Please submit your answer in a neat, readable properly organized format.

In general, a * in exercises indicates a more challenging problem, ** a highly challenging problem.

1. Solve the optimization problems for the jam cans.
2. Use the INTERNET to find a real life optimization problem. Describe it, identify the constraints, the objective function and at least one feasible solution.
3. * The owner's wife loves hexagons. She implores her husband to consider hexagonal boxes. Find the optimal hexagonal box whose volume is 1000 cubic cm. Is it better than the box? Cylinder?
4. Use the Hungarian method to solve by hand the 9×9 assignment problem shown in class (you may use Excel do do the simple numeric reductions). See below.
5. * Prove or disprove: a feasible solution to an assignment problem is optimal if and only if it does not have any "good" exchanges.

	C1	C2	C3	C4	C5	C6	C7	C8	C9
J1	125	112	114	216	170	174	200	210	235
J2	145	152	104	235	185	160	210	190	195
J3	160	95	125	200	190	159	200	210	235
J4	155	133	141	195	180	175	225	200	200
J5	125	165	140	235	200	195	210	220	190
J6	145	139	160	215	199	185	199	189	210
J7	155	149	161	199	189	179	220	250	220
J8	175	113	144	190	186	170	221	205	205
J9	165	173	161	185	179	179	222	210	209

Table 1: Nine companies' bids for nine jobs.