Handout: Max Flow

TODO: Change example???

(2.41) BlackGold Oil Company needs to ship oil each day through its pipelines in Hillbilly, MO to Beverly Hills, CA through any or all of its monitoring stations. The network of its stations and pipelines is given below. Each arc in the network represents a pipeline with a corresponding maximum capaity (in thousands of gallons), which is due to the different pipeline diameters. Formulate and solve a linear program to determine the maximum amount of oil that can be shipped through this network from Hillbilly to Beverly Hills.

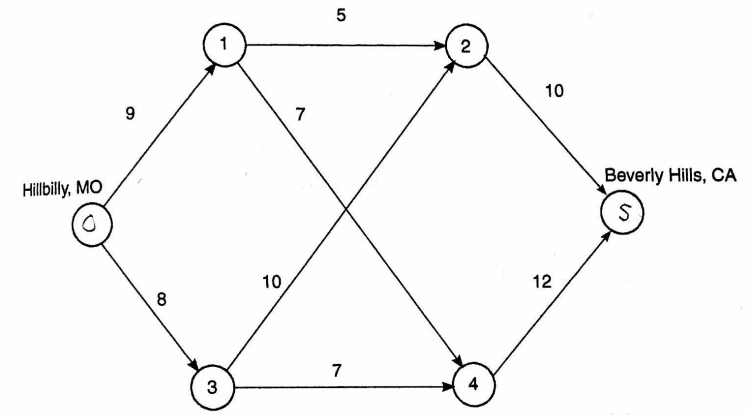

FIGURE 2.5 Network for BlackGold Oil in Exercise 2.41.

1. Is there an intuitive way to find the optimal objective value for this problem?

2. Can you describe a minimization problem that has the same objective value as this max flow problem? (This is the "dual" problem.)

3. Does this problem specify supply and demand? If not, how can we write our balance of flow constraints for the start and end nodes? (Note there are multiple ways to do this)

4. Formulate the LP associated with this max flow model

5. Generalize your LP model from part 5 to abstract (set) notation

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