Session 5   Advanced Linear Programming I

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1. Section 3.8 Problem 12

   - x_0 amount of raw materials
   - x_1 amount of sold product 1
   - x_2 amount of sold product 2
   - x_{12} amount of sold product 2 that is created from product 1
   - x_{13} amount of sold product 3 that is created from product 1
   - x_{23} amount of sold product 3 that is created from product 2

   Here we are assuming that there is no way for creating product 3 from the product 2 that was created from product 1.

   Objective Function:

   $$\max \quad 10x_1 + 20(x_2 + x_{12}) + 30(x_{13} + x_{23}) - 25x_0 - x_2 - x_{12} - 2x_{13} - 6x_{23}$$

   s.t.

   $$2x_0 + 3x_{12} + 3x_{13} + x_{23} \leq 25000$$
   $$x_1 \leq 5000$$
   $$x_2 + x_{12} \leq 5000$$
   $$x_{13} + x_{23} \leq 3000$$
   $$3x_0 = x_1 + x_{12} + x_{13}$$
   $$x_0 = x_2 + x_{23}$$