Department of mechanical and industrial engineering

Engineering

Milling machine Lathe Grinder Available Time (in Machine Hours per Week) 350 150 The number of machine hours required for each unit of the respective products is as follows: Product 1 9 5 3 Product 2 4 Product 3 2 The sales department indicates that the sales potential for products 1 and 2 exceeds the maximum production rate and that the sales potential for product 3 is 20 units per week. The unit profit would be $50, $20, and $25, respectively, on products 1, 2, and 3.

The objective is to determine how much of each product the firm should reduce to maximize profit. Formulate a linear programming model for this problem. Problem No. 2. A television manufacturing company has to decide on the number of 27 and 20-inch sets to be produced at one of its factories. Market research indicates that at most 40 of the 27-inch sets and 10 of the 20-inch sets can be sold per month. The maximum number of work hours available is 500 per month. A 27-inch set requires 20 work hours, and a 20-inch set requires 10 work hours.

Each 27-inch set old produces a profit of $120, and each set produces a profit of $80. A wholesaler has agreed to purchase all the television sets produced if the numbers do not exceed the maximum indicated by the market research. Formulate a linear programming model for this problem. Problem No. 3. Solve the following linear programming problem graphically.