

MA 162 Recitation Worksheet Thursday October 2

1. Determine graphically the solution set for each system of inequalities and determine whether the solution set is bounded or unbounded.

(a)

$$\begin{aligned}2x + 4y &> 16 \\ -x + 3y &\geq 7\end{aligned}$$

(b)

$$\begin{aligned}x + y &\geq -2 \\ 3x - y &> 5\end{aligned}$$

(c)

$$\begin{aligned}3x + 4y &\geq 12 \\ 2x - y - 2 & \\ 0 \leq y &\leq 3 \\ x &\geq 0\end{aligned}$$

2. Ace Novelty manufactures Giant Pandas and Saint Bernards. Each Panda requires 1.5 yd² of plush, 30 ft³ of stuffing and 5 pieces of trim; each Saint Bernard requires 2 yd² of plush, 35 ft³ of stuffing and 8 pieces of trim. The profit for each Panda is \$10 and the profit for each Saint Bernard is \$15. If 3600 yd² of plush, 6600 ft³ of stuffing and 13600 pieces of trim are available, how many of each stuffed animals should the company manufacture to maximize the profit?
3. Steinwelt Piano manufactures upright and console pianos in two plants, Plant I and Plant II. The output of Plant I is at most 300/month, whereas the output of Plant II is at most 250/month. These pianos are shipped to three warehouses, which serve as distribution centers for the company. To fill the current and projected future orders, Warehouse A requires at least 200 pianos/month and Warehouse B requires at least 150 piano/month and Warehouse C requires at least 200 pianos/month. The shipping cost of each piano from Plant I to Warehouse A, Warehouse B and Warehouse C is \$60, \$60 and \$80 respectively and the shipping cost of piano from Plant II is \$80, \$70 and \$50 respectively. What shipping schedule will enable Steinwelt to meet the warehouse's requirements while keeping shipping costs to a minimum?
4. A company manufactures two products, A and B, on two machines, I and II. It has been determined that the company will realize a profit of \$3/unit of Product A and a profit of \$4/unit of Product B. To manufacture a unit of Product A requires 6 min on Machine I and 5 min on Machine II. To manufacture a a unit of Product B requires 9 min on Machine I and 4 min in Machine 2. There are 5 hr of machine time available on Machine I and 3 hr of machine time available on Machine II in each work shift. How many units of each product should be produced in each shift to maximize the company's profit?. What is the optimal profit?