

Linear Programming WS

1. $x = \# \text{ of spinets}, y = \# \text{ of consoles}$

$$0 \leq x \leq 450$$

$$0 \leq y \leq 200$$

$$600x + 900y \leq 300,000$$

Profit

$$P = 125x + 200y$$

Vertices: $(0,0)$ $(450,0)$ $(0,200)$ $(450,100)$ $(300,200)$

Max Profit of \$77500 occurs when 300 spinets + 200 consoles are made

2. $x = \# \text{ of units of A}, y = \# \text{ of units of B}$

$$0 \leq x \leq 9, y \geq 18$$

$$4x + 12y \leq 300$$

Wt

$$W = 10x + 20y$$

Vertices: $(0,18)$ $(9,18)$ $(0,25)$ $(9,22)$

Max weight of 530 lbs when 9 units of A + 22 units of B are used.

3. $x = \# \text{ of cars}, y = \# \text{ of busses}$

$$x \geq 0, y \geq 0$$

$$x + y \leq 60$$

$$6x + 30y \leq 600$$

Profit

$$P = 2.50x + 7.50y$$

Vertices: $(0,20)$ $(50,10)$ $(0,0)$ $(60,0)$

are allowed in

Max Profit of \$200 earned when 50 cars + 10 busses

4. $b = \# \text{ of bean acres}$

$c = \# \text{ of corn acres}$

$$b \geq 0, c \geq 0$$

$$b + c \leq 250$$

$$\frac{b}{15} + \frac{c}{10} \leq 20$$

Vertices

$(0,200)$ $(150,100)$ $(250,0)$

a) Profit of \$6750 made if he

plants 150 acres of beans, 100 acres

b) Profit of \$7500 made if he

plants 250 acres of beans + no corn