

Eric Knecht

HW 2

ITEC 442

55

1) $\max p = 100w + 80c$

$$w + c \leq 7$$

$$10(c) \geq 30$$

$$40(w) + 4(c) \leq 40$$

$$w \geq 0 \quad c \geq 0$$

- 2) a) no
b) no
c) no
d) yes

3) $\max p = 4w + 3c$

$$\frac{w}{25} + \frac{c}{10} \leq 7$$

$$c \geq 30$$

63 $10\left(\frac{w}{25}\right) + 4\left(\frac{c}{10}\right) \leq 40 \quad w \geq 0 \quad c \geq 0$

3) $\min c = 4x_1 + x_2$

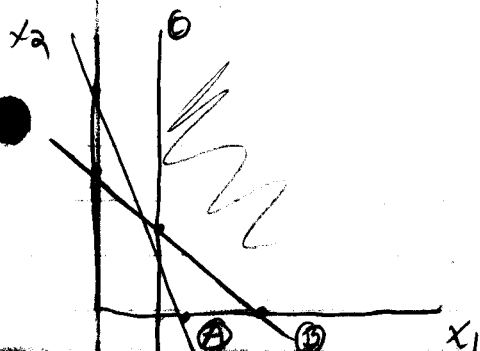
$$3x_1 + x_2 \geq 10 \quad (A)$$

$$x_1 + x_2 \geq 5 \quad (B)$$

$$x_1 \geq 3 \quad (C)$$

$$x_1 + x_2 \leq 24$$

$$x_1, x_2 \geq 0$$



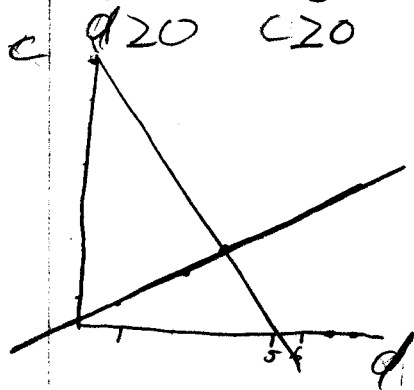
- 4) a)
b)
c)
d)

5) $\max p = 40(d) + 25(c)$

$$d \leq 2c \Rightarrow d - 2c = 0 \quad (1, \frac{1}{2}), (2, 1)$$

$$4(d) + 3(c) \leq 20$$

$$(0, \frac{6\frac{2}{3}}, (5, 0))$$



7/

7) $\min c = 15x_1 + 10x_2 + 20x_3$

$$1(x_1) + 2(x_2) + 4(x_3) \geq 30$$

$$.45(x_1) + .25(x_2) + .3(x_3) \geq 40$$

$$x_1 - 3 \geq 0$$

All assumptions are valid

23) $\max p = 6x_1 + 8x_2 + 10x_3$

This is complex, can we go over it in class?

30-31 on back

51) $\min c = 50x_1 + 70x_2$

$$x_1 + x_2 \leq 20,000$$

$$5(x_1) + 15(x_2) \leq 1000$$

$$15(x_1) + 20(x_2) \leq 2000$$

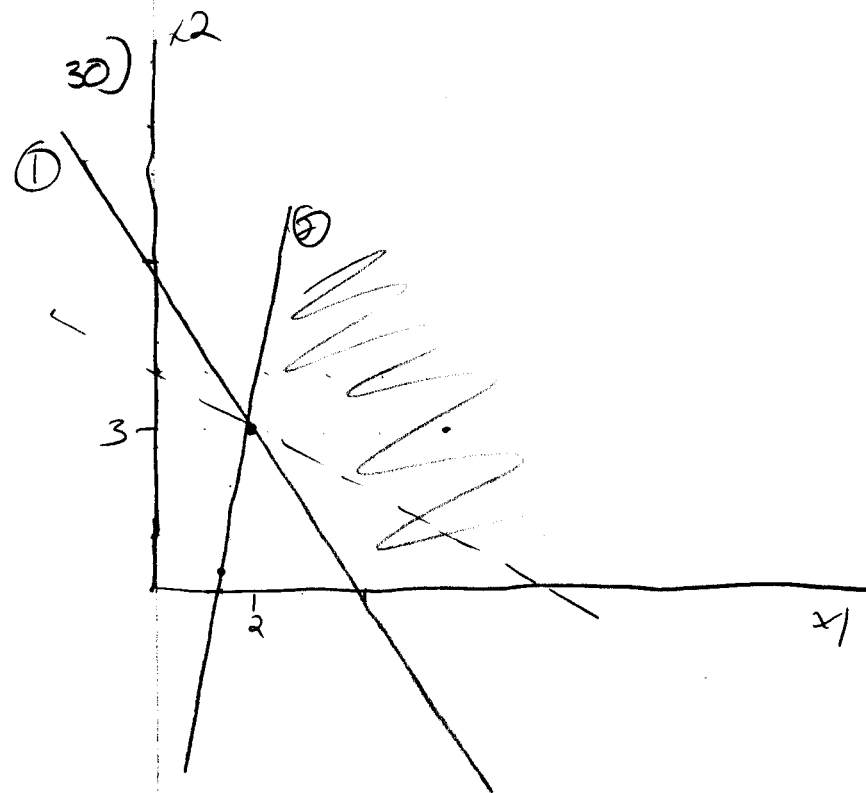
$$20(x_1) + 25(x_2) \leq 3000$$

$$30(x_1) + 20(x_2) \leq 3000$$

$$x_1 \geq 0 \quad x_2 \geq 0$$

39) $\max z =$

50)



isoprofit: $-5x_1 = x_2 + z$
 $x_1 = \frac{1}{5}x_2 + z$

$$\max z = 5x_1 - x_2$$

st:

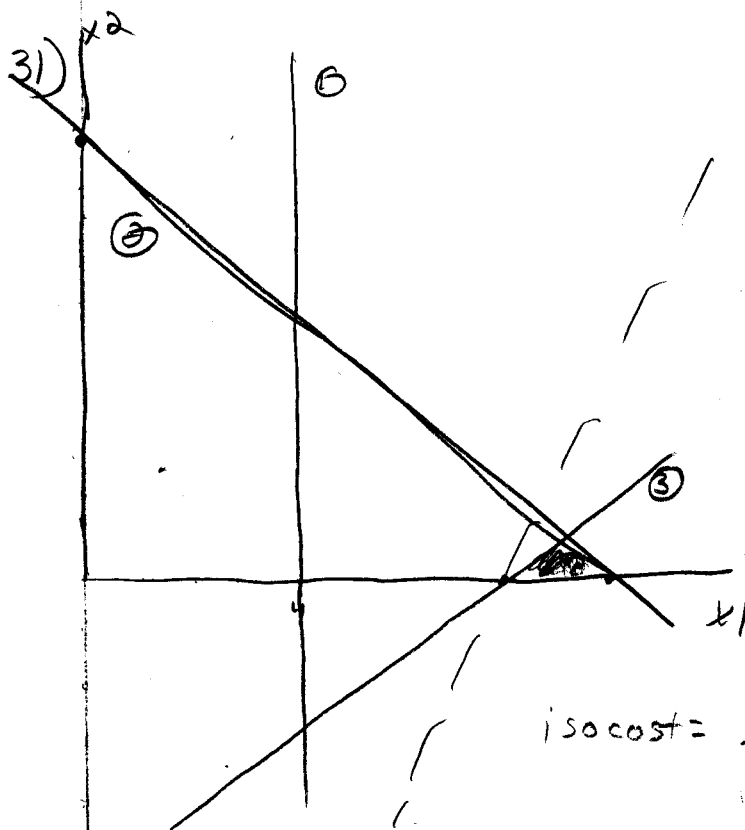
line 1) $2x_1 + 3x_2 \geq 12$

line 2) $x_1 - 3x_2 \geq 0$

$$x_1, x_2 \geq 0$$

line 1: $(0, 4) (6, 0)$

line 2: $(0, 3) (3, 0)$



isocost: $x_1 = 2x_2 + z$

$$\min z = x_1 - 2x_2$$

st: 1) $x_1 \geq 4$

2) $x_1 + x_2 \geq 8$ $(0, 8) (8, 0)$

3) $x_1 - x_2 \leq 6$ $(0, -6) (6, 0)$

$$x_1, x_2 \geq 0$$