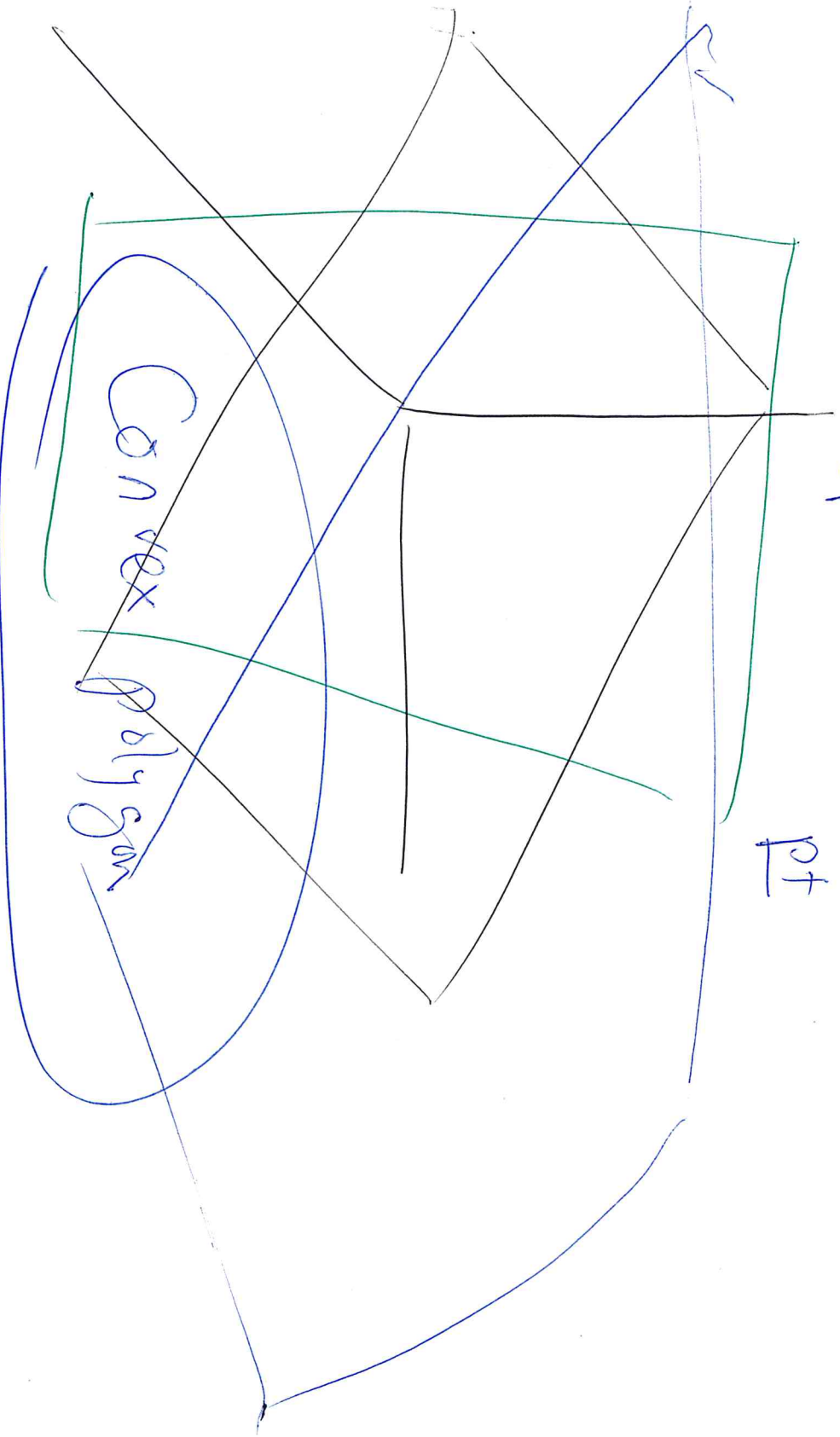
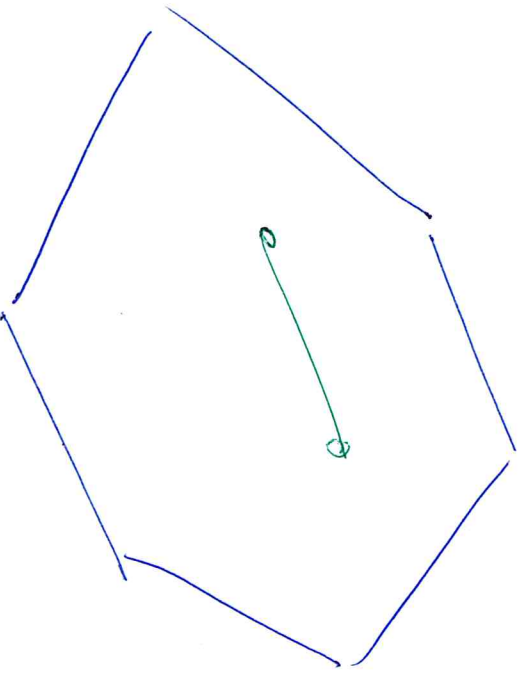


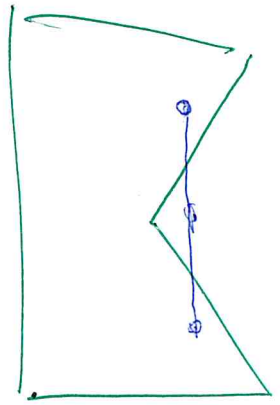
Algorithm \rightarrow Corner

pt





Convex



Concave

Quantized \geq \leq
 \downarrow
Standard $=$

Max

$$30x + 20y$$

decision variable

$$x + y + s$$

surplus

$$= 50 \wedge s \geq 0$$

$$x + y$$

$$\leq 50$$

$$40x + 60y$$

$$\leq 2400$$

$$40x + 60y$$

$$+ t = 2400 \wedge t \geq 0$$

x

20

y

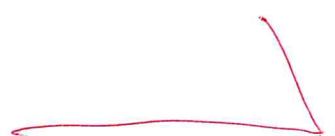
20

s

20

t

20



$$\begin{bmatrix} 1 & 1 & 1 & 0 \\ 40 & 60 & 0 & 1 \end{bmatrix} \begin{bmatrix} x \\ y \\ z \\ t \end{bmatrix} = \begin{bmatrix} 50 \\ 2400 \end{bmatrix}$$

$$E = S=0, X=0$$

$$\begin{bmatrix} \cancel{1} & \cancel{1} & 0 \\ \cancel{40} & \cancel{60} & 1 \end{bmatrix} \begin{bmatrix} x \\ y \\ t \end{bmatrix} = \begin{bmatrix} 50 \\ 2400 \end{bmatrix}$$

$$\begin{bmatrix} 1 & 0 \\ 60 & 1 \end{bmatrix} \begin{bmatrix} y \\ t \end{bmatrix} = \begin{bmatrix} 50 \\ 2400 \end{bmatrix}$$

$$\begin{pmatrix} y \\ t \end{pmatrix} = z \begin{pmatrix} 50 \\ -600 \end{pmatrix}$$

t < 0

z > 0

Infeasible

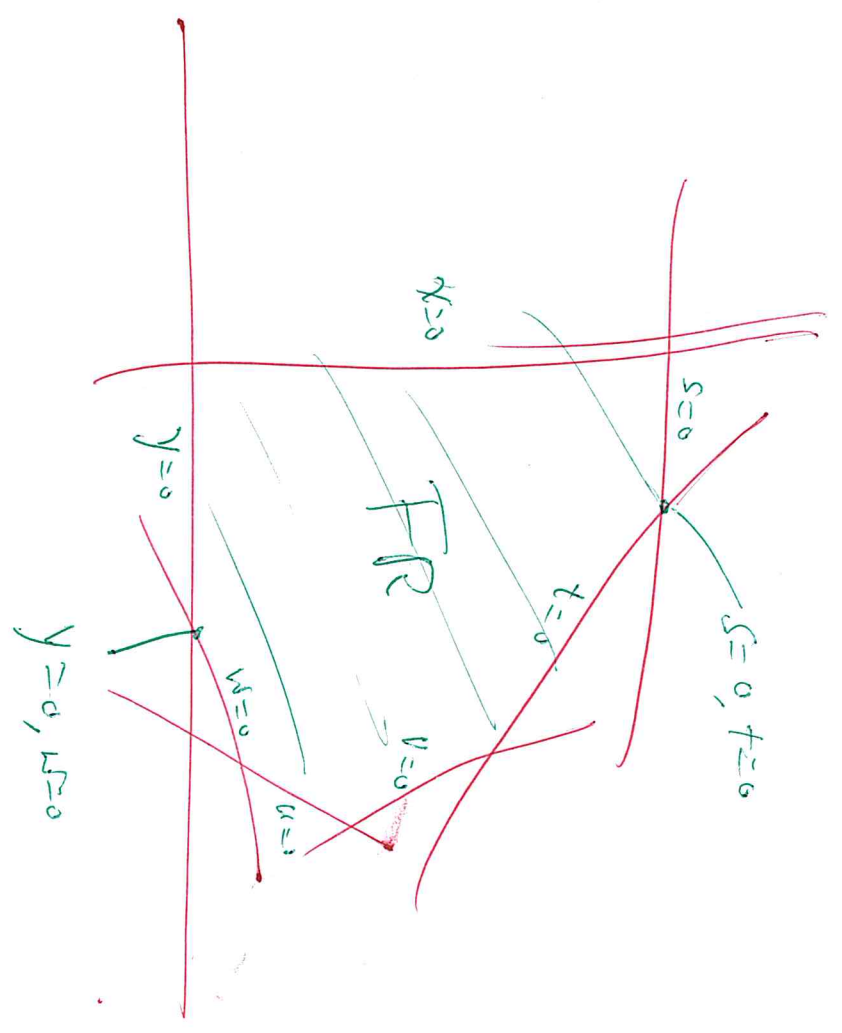
$$\begin{pmatrix} 1 & 1 & 1 & 0 \\ 40 & 60 & 0 & 0 \end{pmatrix} \begin{pmatrix} 10 \\ 10 \\ 5 \\ t \end{pmatrix} = \begin{bmatrix} 50 \\ 240 \end{bmatrix}$$

$$\begin{pmatrix} 1 & 1 & 1 \\ 40 & 60 & 0 \end{pmatrix} \begin{pmatrix} 10 \\ 10 \\ 10 \end{pmatrix} + \begin{pmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \end{pmatrix} \begin{pmatrix} 5 \\ t \end{pmatrix} = \begin{bmatrix} 50 \\ 240 \end{bmatrix}$$

$$\begin{pmatrix} 20 \\ 1000 \end{pmatrix} + \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix} \begin{pmatrix} 5 \\ t \end{pmatrix} = \begin{bmatrix} 50 \\ 240 \end{bmatrix}$$

$$\begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix} \begin{pmatrix} 5 \\ t \end{pmatrix} = \begin{bmatrix} 30 \\ 140 \end{bmatrix}$$

$$\begin{pmatrix} 5 \\ t \end{pmatrix} = \begin{bmatrix} 30 \\ 140 \end{bmatrix}$$



$$\text{max } 30x + 20y$$

$$x + y \leq 50$$

$$40x + 60y \leq 2400$$

$$x + 2y \leq 40$$

$$x, y \geq 0$$

$$\begin{pmatrix} 1 & 1 & 1 & 0 & 0 \\ 40 & 60 & 0 & 1 & 0 \\ 1 & 2 & 0 & 0 & 1 \end{pmatrix} \begin{pmatrix} x \\ y \\ s \\ t \\ u \end{pmatrix} = \begin{pmatrix} 50 \\ 2400 \\ 40 \end{pmatrix}$$

$x, y, s, t, u \geq 0$

$$C_5 = \frac{5:4}{2} = 10$$

$$t = u = 0$$

$$\begin{pmatrix} 1 & 1 & 1 & 1 & 0 \\ 40 & 60 & 0 & 0 & 0 \\ 1 & 2 & 0 & 0 & 0 \end{pmatrix} \begin{pmatrix} x \\ y \\ s \\ t \\ u \end{pmatrix} = \begin{pmatrix} 50 \\ 2400 \\ 40 \end{pmatrix}$$