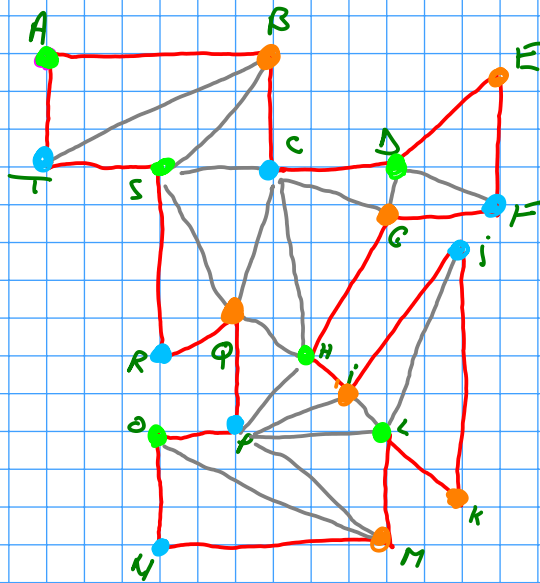


## Exemple galerie de arts

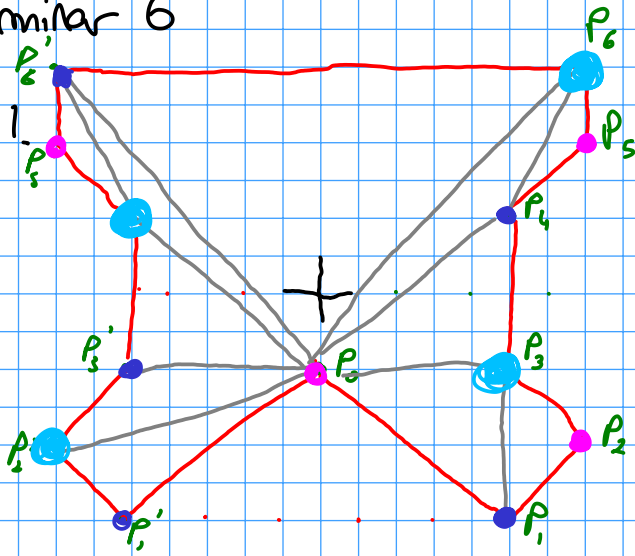


punkte in total : 20

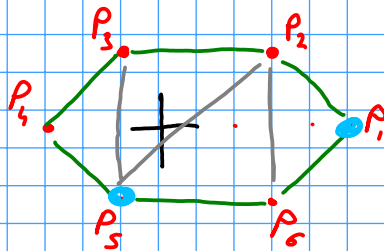
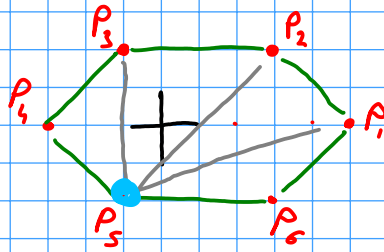
●		6
●		7
●		7

# Seminar 6

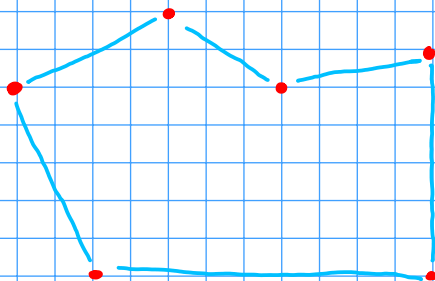
Ex 1



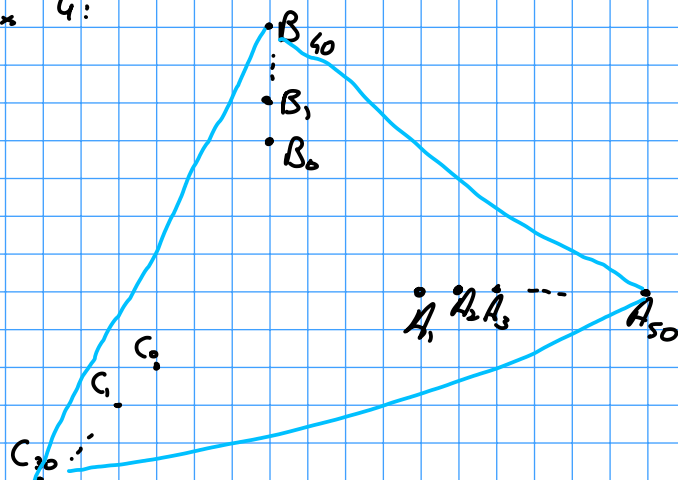
Ex 2



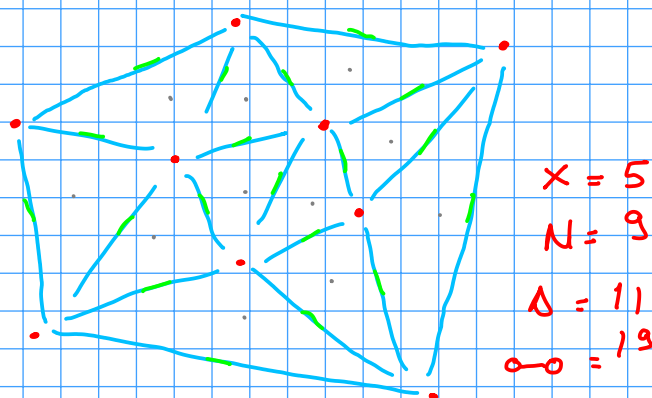
Ex 3



Ex 4:



$N$  puncte  
 $X$  sunt pe Inf. conv.



$X = 5$   
 $N = 9$   
 $\Delta = 11$   
 $o-o = 19$

$$\text{Sol}(N, X) = \begin{pmatrix} \# \Delta \\ \# \text{muchii} \end{pmatrix}$$

$$\text{Sol}(X, X) = \begin{pmatrix} X-2 \\ 2X-3 \end{pmatrix}$$

$$\text{Sol}(N-1, X) = \begin{pmatrix} a \\ b \end{pmatrix}$$

$$\hookrightarrow \text{Sol}(N, X) = \begin{pmatrix} a+2 \\ b+3 \end{pmatrix}$$

$$\text{Sol}(N, X) = \begin{pmatrix} X-2 + (N-X) \cdot 2 \\ 2X-3 + (N-X) \cdot 3 \end{pmatrix}$$

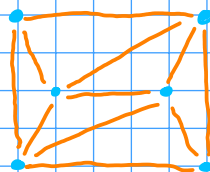
$$= \begin{pmatrix} 2N - X - 2 \\ 3N - X - 3 \end{pmatrix}$$

$$\text{Sol}(9, 5) = \begin{pmatrix} 11 \\ 19 \end{pmatrix}$$

Ex 5

$$Sol(N, x) = \binom{2N-x-2}{8N-x-3} = \binom{6}{11}$$

$$\begin{cases} 2N-x=8 \\ 8N-x=14 \end{cases} \Leftrightarrow \begin{cases} N=6 \\ x=4 \end{cases}$$



$P_1$   $P_2$

Ex 6.



$P_4$   $P_5$



$$I \quad \alpha < 2 \Rightarrow Sol(5, 6) = \binom{4}{9}$$

$$II \quad 2 \leq \alpha \leq 8 \Rightarrow Sol(6, 5) = \binom{5}{10}$$

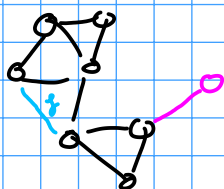
$$III \quad 8 < \alpha \rightarrow$$

Ex 7

$$\begin{matrix} v=1 \\ m=0 \\ f=1 \end{matrix}$$

$$v+f-m=2$$

$$\begin{matrix} v=2 \\ m=1 \\ f=1 \end{matrix}$$



$$\begin{matrix} v=3 \\ m=2 \\ f=1 \end{matrix}$$

$$\begin{matrix} v=3 \\ m=3 \\ f=2 \end{matrix}$$

$$v \leq \frac{2}{3} m$$

$$gr(x) \geq 3 \forall x$$

Fiecare nod este adiacent la cel puțin 3 muchii

Fiecare muchie atinge două vârfuri



Averm cel puțin  $3v$  capete de muchii

( $\Rightarrow$ ) Averm cel puțin  $\frac{3v}{2}$  muchii

$$m \geq \frac{3}{2} v$$

$$(\Leftrightarrow) \frac{3}{2} v \leq m \Leftrightarrow v \leq \frac{2}{3} m$$

Euler :  $v + f - m = 2$

$$\left\{ \begin{array}{l} \circ \text{ fiecare are cel puțin 3 muchii} \\ \circ \text{ muchie face parte din} \\ \quad \text{max 2 fețe.} \end{array} \right.$$

$\Rightarrow$

$$f \leq 2m/3$$

$$v + f - m = 2$$

$$v + \frac{2m}{3} - m \geq 2$$

$$3v - m \geq 6$$

$$m \leq 3v - 6 \quad \text{qed}$$

$$f \leq \frac{2}{3} m \quad v \leq \frac{2}{3} m$$

$$f \leq 2v - 4$$

$$v + f - m = 2 \Rightarrow f = m + 2 - v$$

$$f \leq 2v - 4 \Leftrightarrow m + 2 - v \leq 2v - 4$$

$$\Leftrightarrow m \leq 3v - 6$$

$$m \leq 3f - 6 ?$$

$$v + f - m = 2$$

$$\Rightarrow m = v + f - 2$$

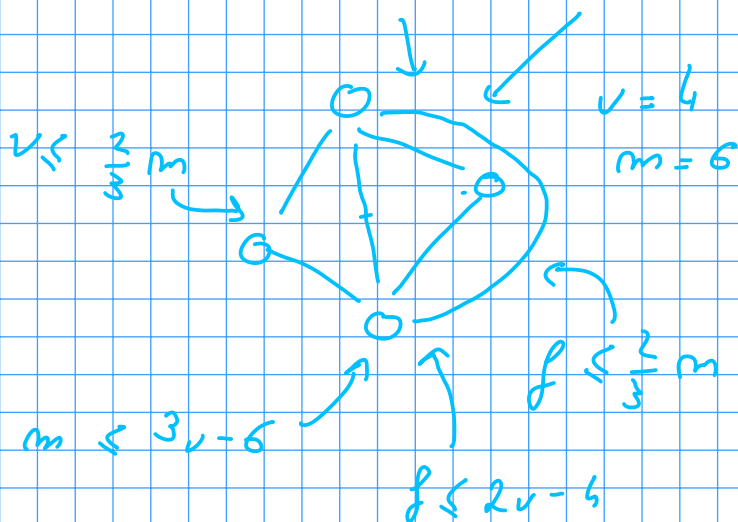
$$v + f - 2 \leq 3f - 6$$

$$\Leftrightarrow$$

$$v + 4 \leq 2f$$

$$v \leq 2f - 4$$

$$m \leq 3f - 6$$



$$V_{rem} \quad v \leq 2f-4$$

$$\frac{2}{3}m \stackrel{?}{\leq} 2f-4$$

$$m \stackrel{?}{\leq} 3f-6$$

$$v \leq \frac{2}{3}m$$

$$v+f-m=2$$

$$\frac{2}{3}m+f-m \geq 2$$

$$2m+3f-3m \geq 6$$

$$\boxed{m \leq 3f-6}$$