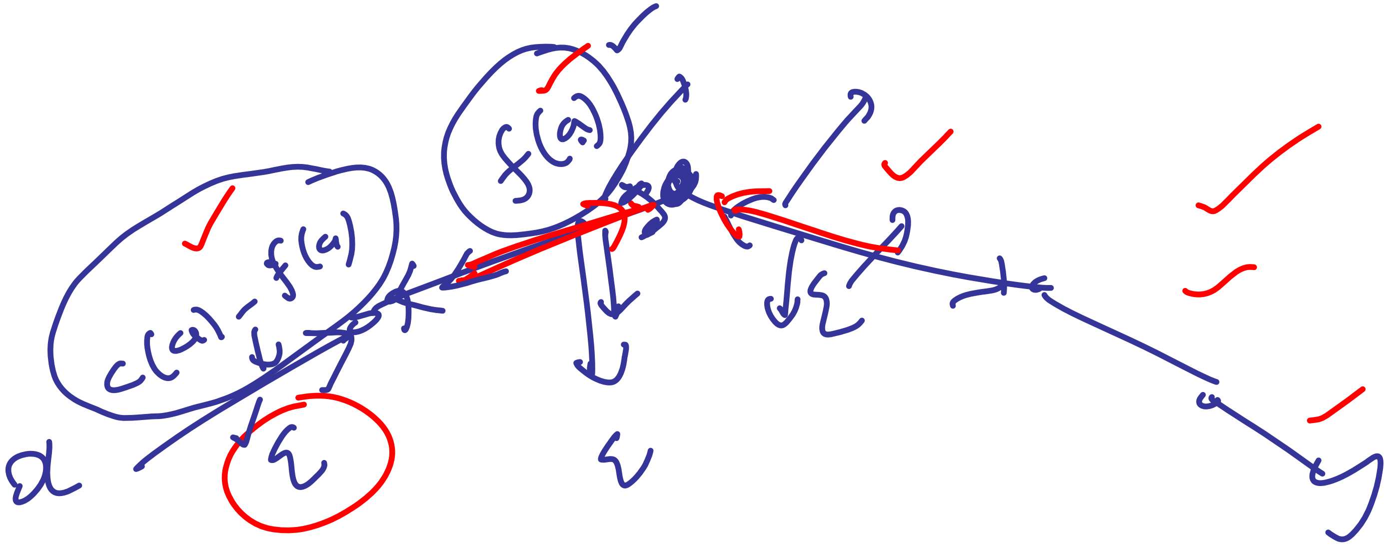
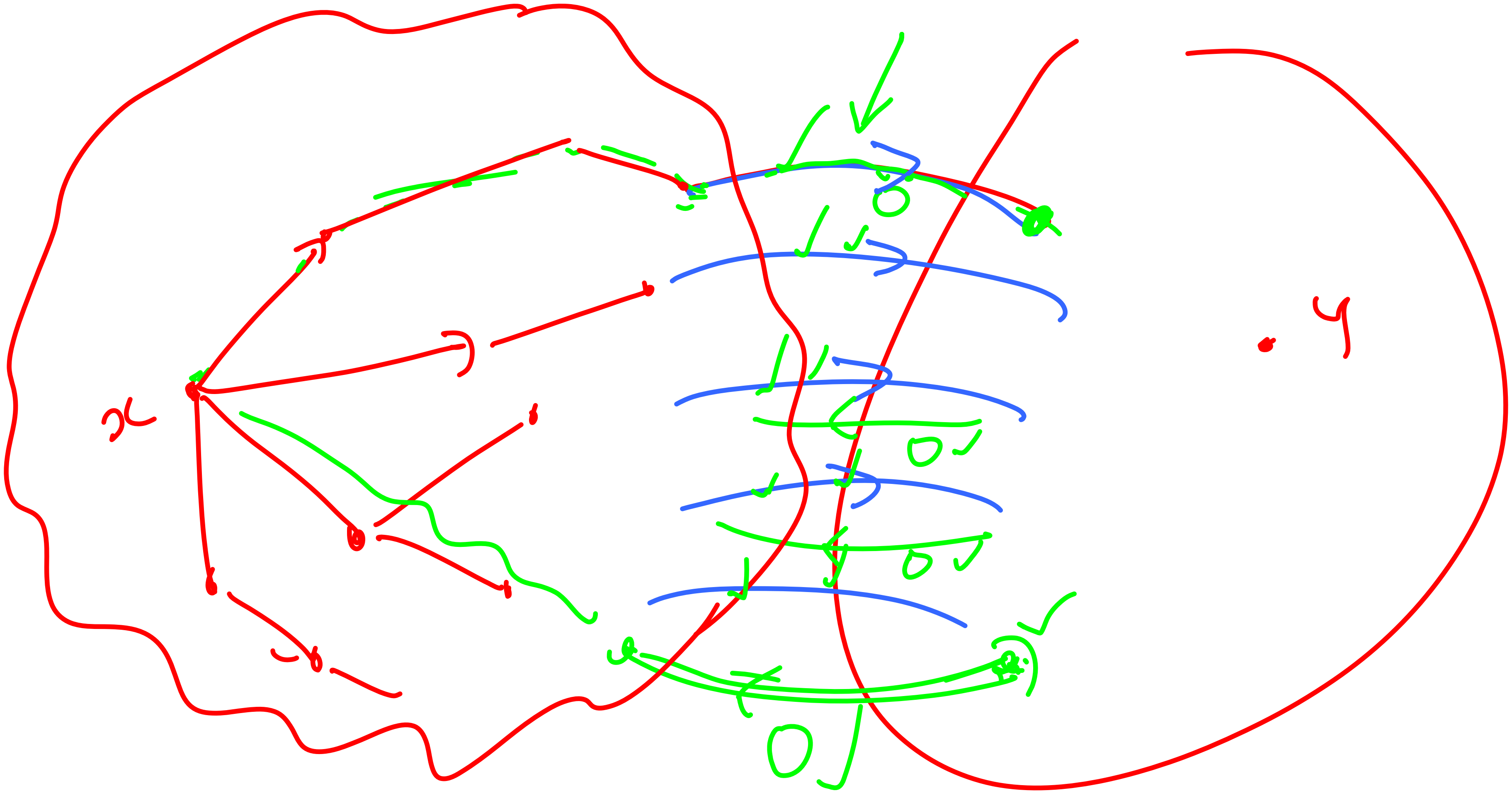


$f' \leftarrow f$


x
y

① $\underbrace{X = \{x\}}$, $\underbrace{p(v) = \phi}$, $\forall v \in V$

② While (there is either an f-unsaturated arc $a = (u, v)$ or an f-positive arc $a = (v, u)$ ~~wh~~ with $u \in X$ and $v \in V - X$, do

$$X = X \cup \{v\},$$

$$p(v) = u$$

end (while)

If $y \in X$, then ~~x~~ find $\varepsilon(P)$
$= \min\{\varepsilon(a) : a \in P\}$
where P is the x–y path defined by the pred.' fn. p.

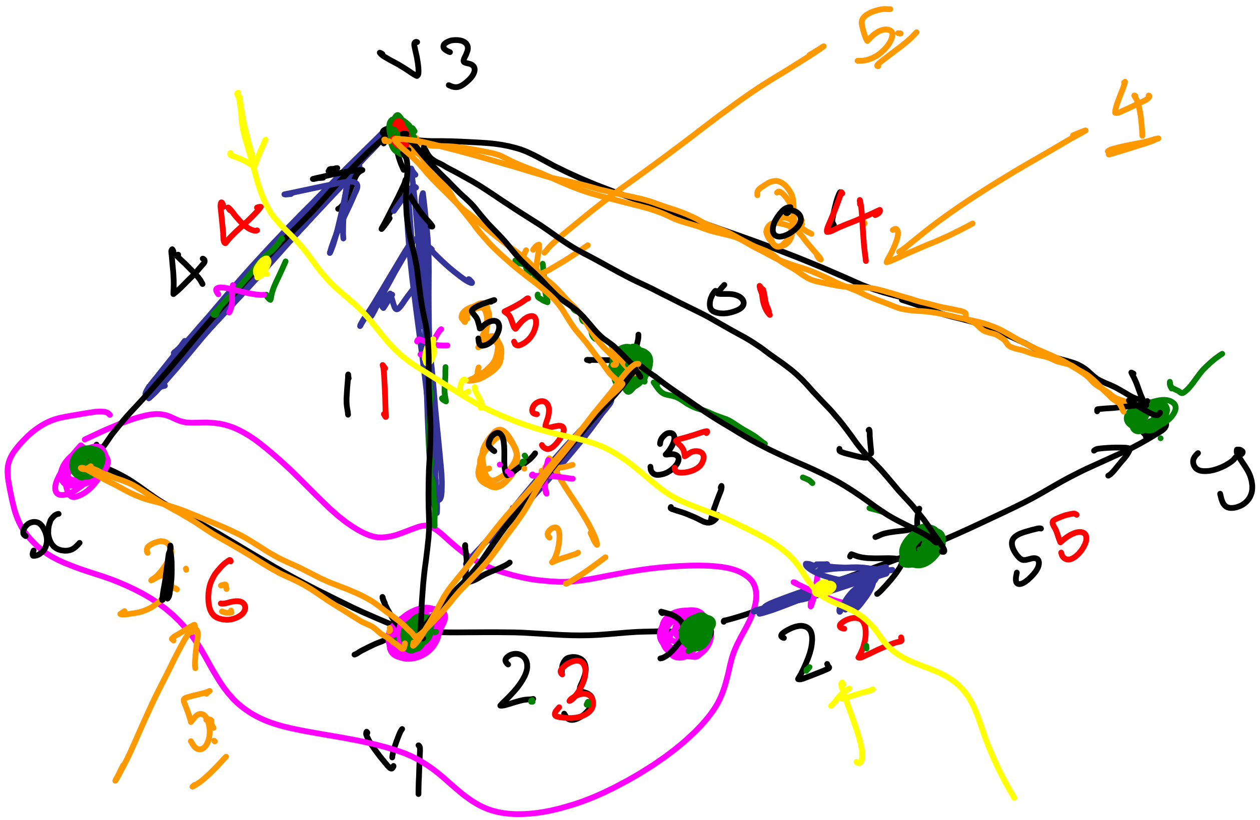
for a forward arc a of P

$$f(a) = f(a) + \varepsilon(p).$$

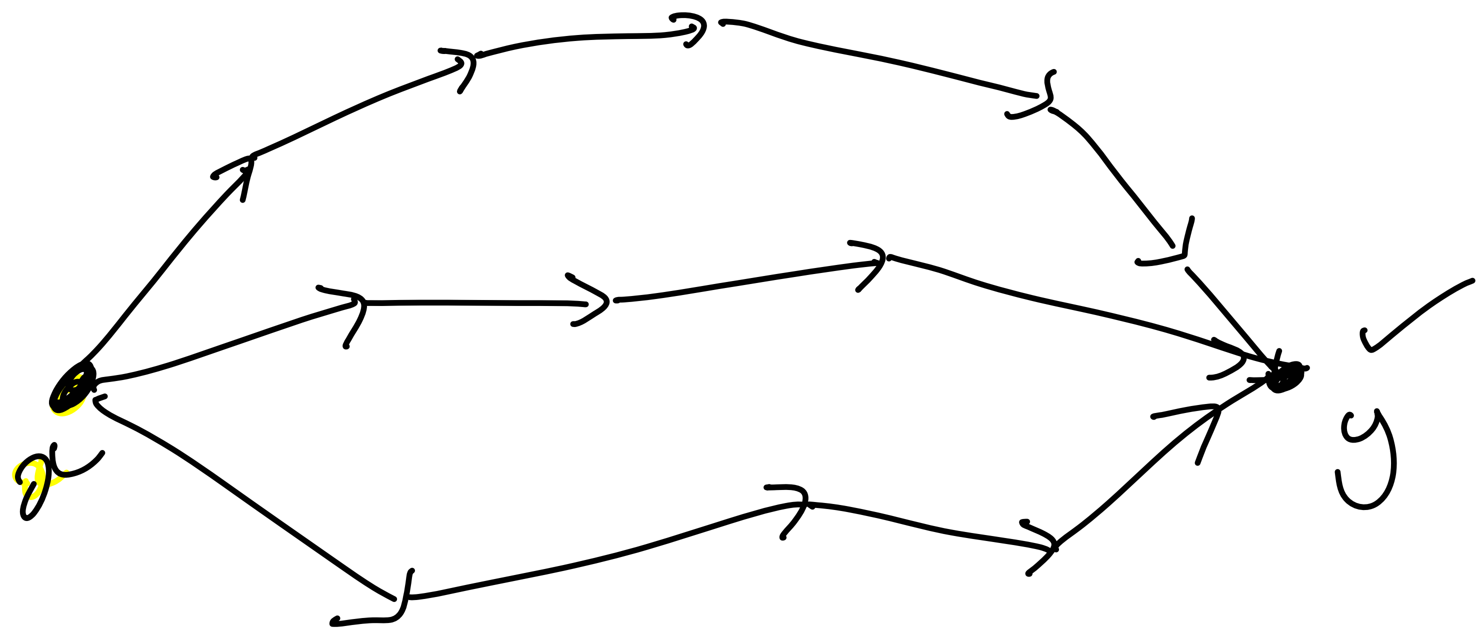
for a reverse arc a of P

$$f(a) = f(a) - \varepsilon(p)$$

$$\text{return}\left(f,\ \partial^f(x) \right)$$



v3
x
v1
y


x
y

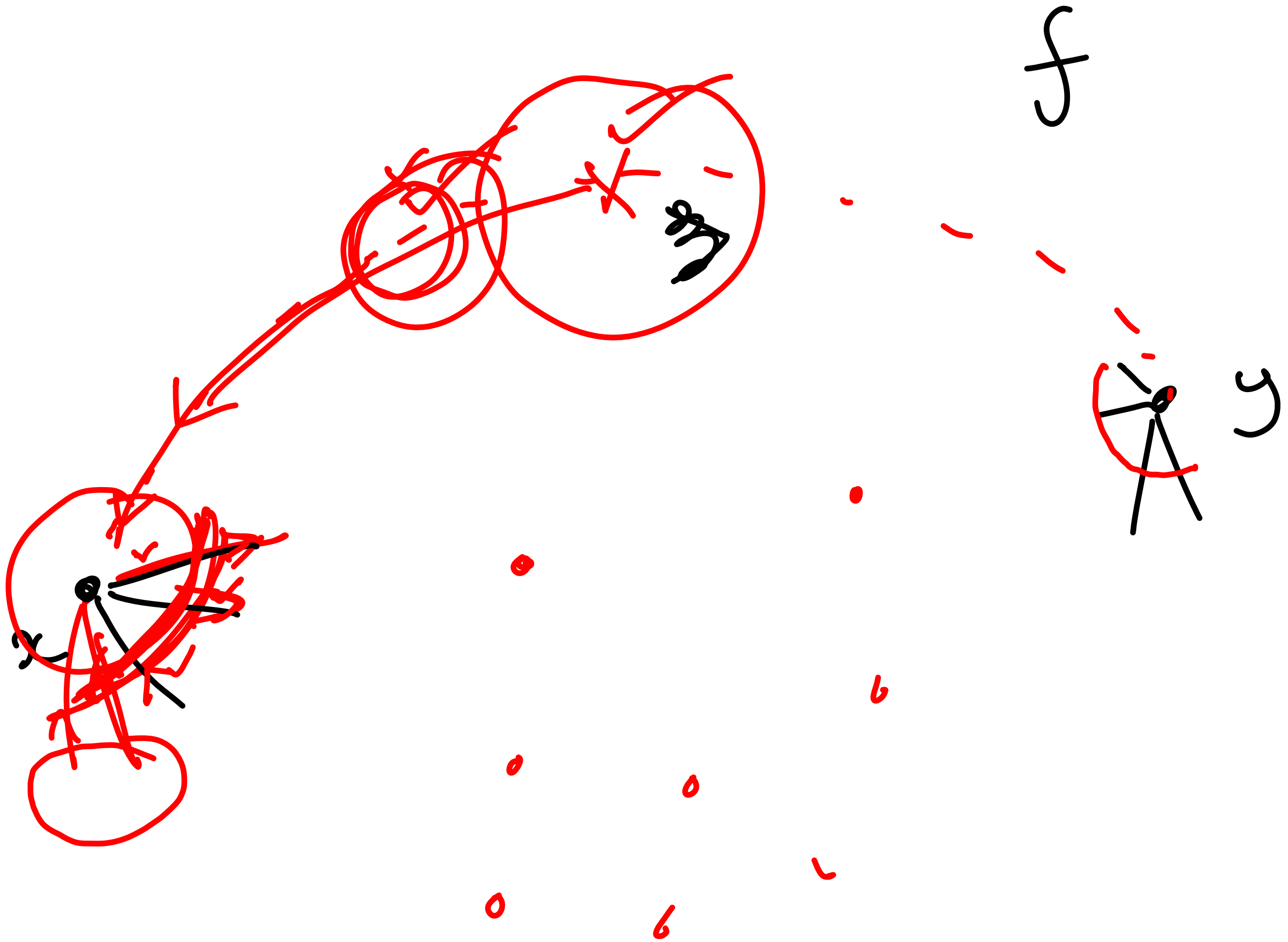
Circulations ✓

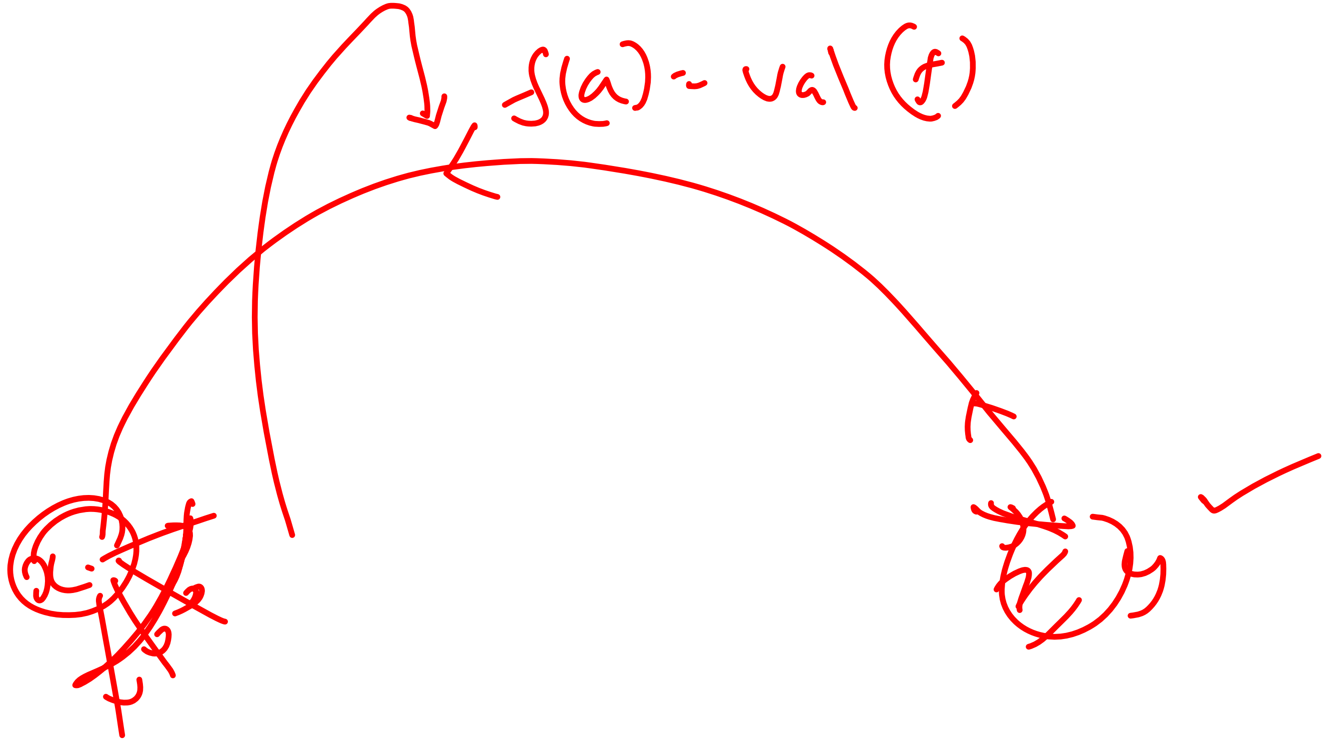
$$v \in V - \{x, y\}$$

x $\qquad$ y

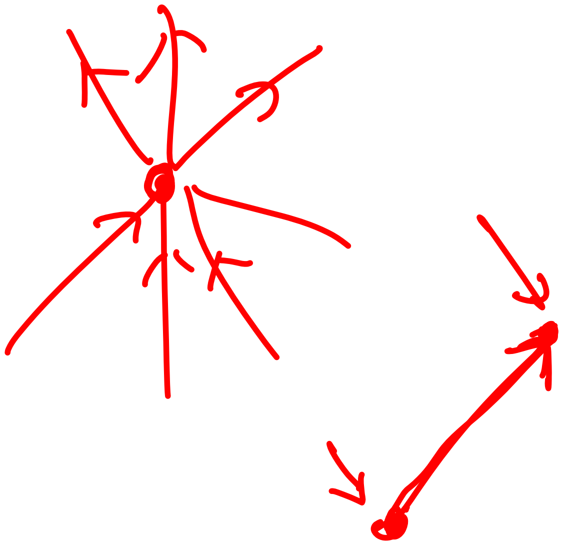
$$f^+(v) = f^-(v)$$

If for all $v \in V$, $\underline{f^+(v) = f^-(v)}$


f
m
x
y


f(a) = val(f)

$$
(i, j) \qquad M = \begin{array}{c|cccccc}
 & a_1 & a_2 & \cdots & a_j & \cdots & a_m \\
\hline
1 & 0 & 0 & & 1 & 1 & \\
2 & & & & & & \\
3 & & & & & 0 & \\
\vdots & & & & & 0 & \\
\vdots & & & & & 1 & \\
n & & & & & \cancel{0} &
\end{array}
$$



$$\vdots$$

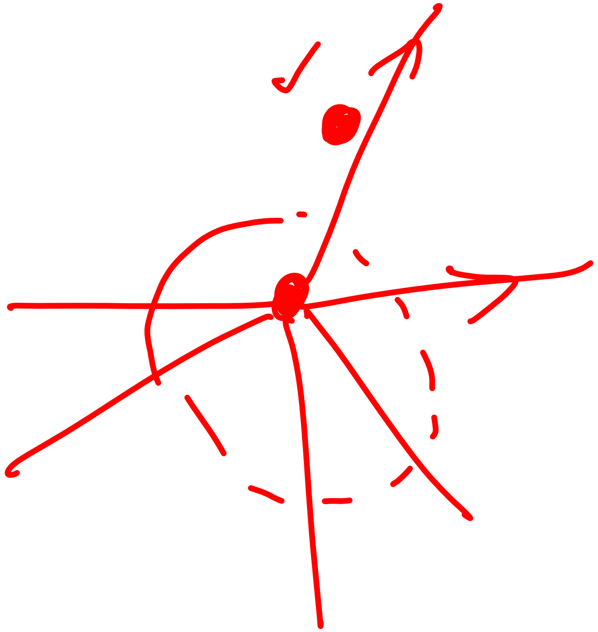
$\cdot \; M_f =$

$$\begin{array}{c|c} a_1 & 0 \\ a_2 & 0 \\ \vdots & 0 \\ & 0 \\ & 0 \\ \vdots & 0 \\ & 1 \\ \vdots & \vdots \\ a_m & \end{array} \quad \begin{array}{c} 1 \\ 2 \\ 3 \\ \\ \\ n \end{array}\begin{bmatrix} 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{bmatrix}$$

$$\begin{array}{c} a_1 \\ a_2 \\ a_3 \\ \vdots \\ a_i \rightarrow \\ \\ a_m \end{array}\begin{bmatrix} f(a_1) \\ f(a_2) \\ f(a_3) \\ \vdots \\ 1 \\ \vdots \\ \vdots \end{bmatrix}$$

"f" $\longleftarrow$ support

$$\{a \in A : f(a) \neq 0\}$$



$f_c(a) = 1$ $\quad$ $f_c(a) = -1$