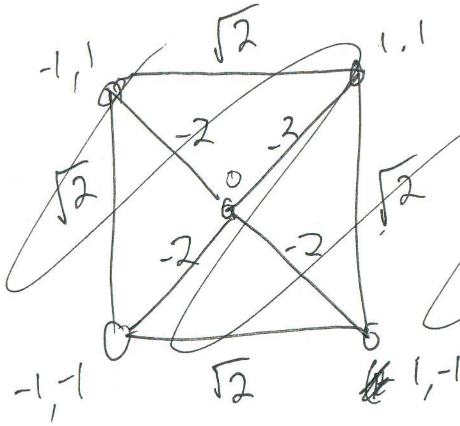
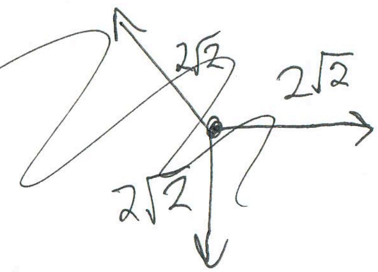
$$\left.\begin{array}{l}\exists \text{ trivial } 0 \text{ stress} \\ \text{negatives} \\ \text{scaling} \\ \text{add}\end{array}\right\} \text{Vector Space}$$

No single "right" stress

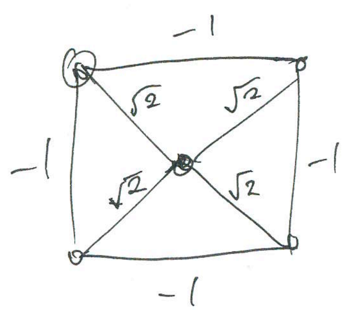
Eq Stress $\Rightarrow$ Reciprocal Diagram

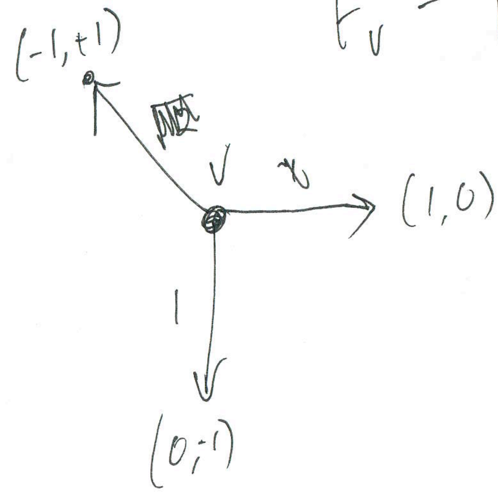


Corner:



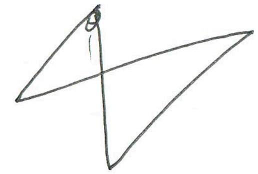
$$F_v = \begin{bmatrix}-1\\+1\end{bmatrix} + \begin{bmatrix}1\\0\end{bmatrix} + \begin{bmatrix}0\\-1\end{bmatrix} = 0$$



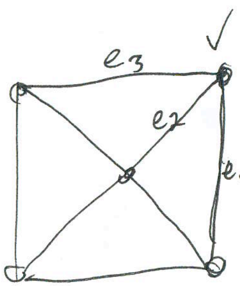


Reciprocal Diagram

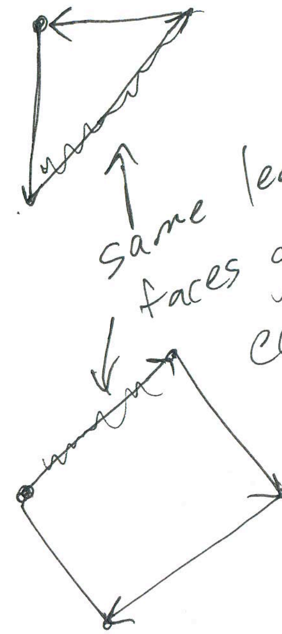
1 face per vertex



corner



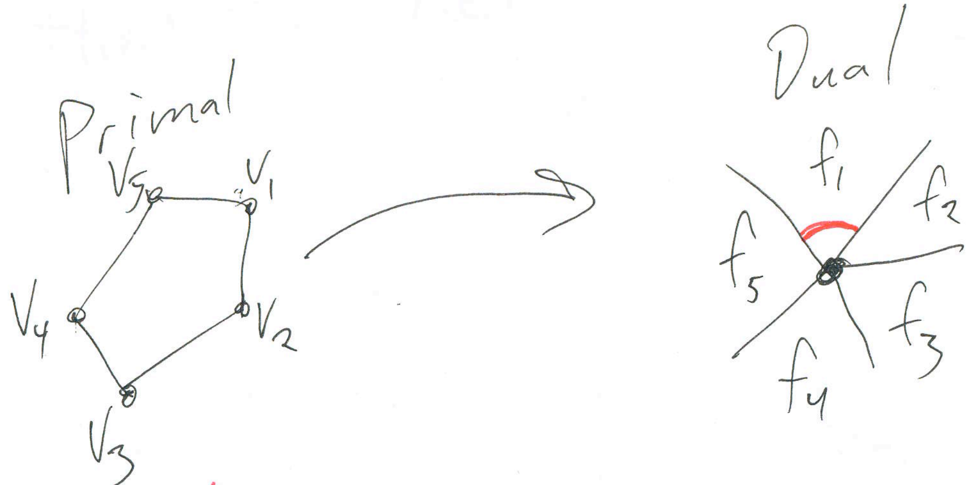
face corresponding to v



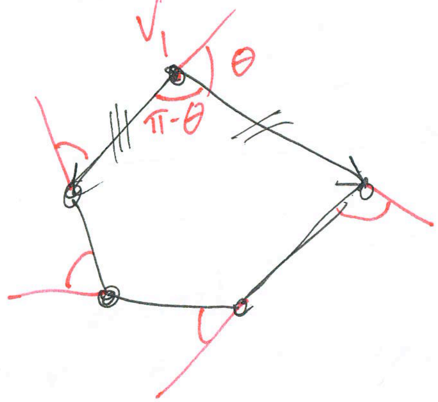
same length

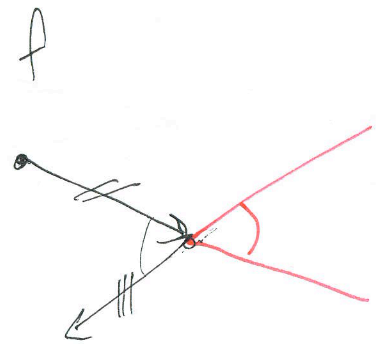
faces glue at edges

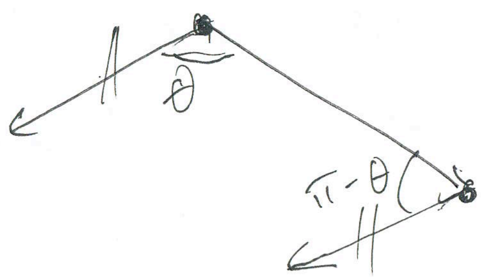
Center

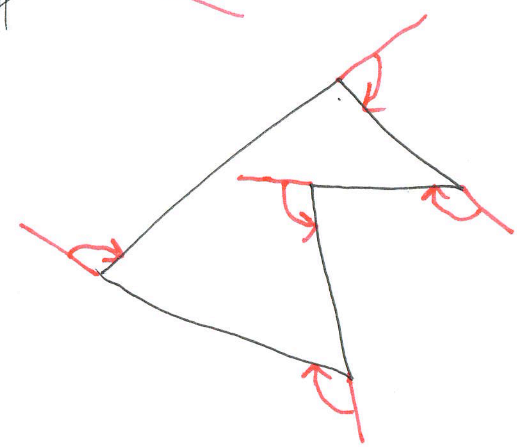


$$\sum \theta_i = 2\pi$$









Lifting $\Rightarrow$ Reciprocal Diagram

$h(x)$ = height of the lifting at point x

$h : \mathbb{R}^2 \to \mathbb{R}$

$\nabla h = \left(\frac{\partial h}{\partial x}, \frac{\partial h}{\partial y} \right)$

constant on faces

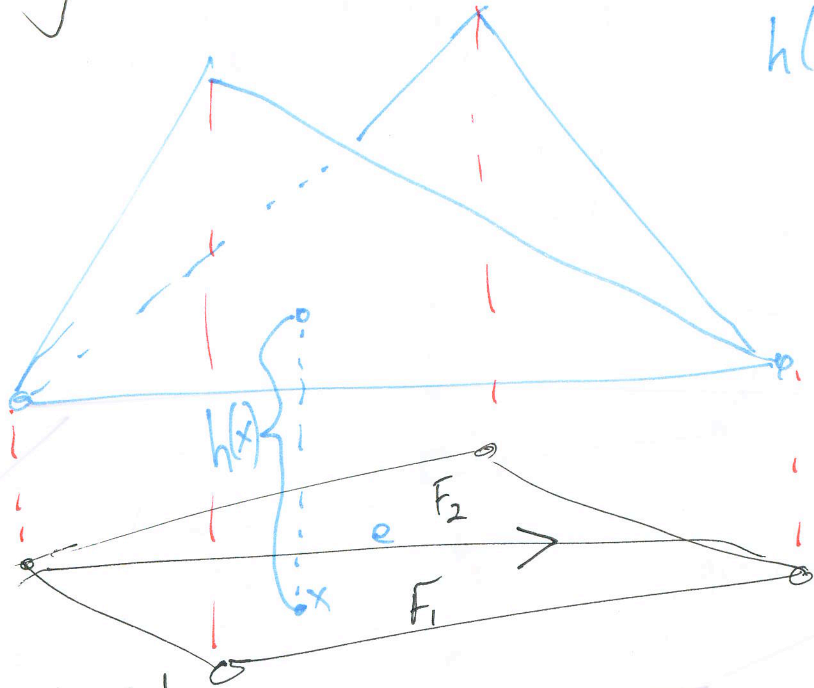
$g(F) = \nabla h(x)$ for $x \in F$

h_1

h_2

$g(F_1) = \nabla h_1$

$g(F_2) = \nabla h_2$

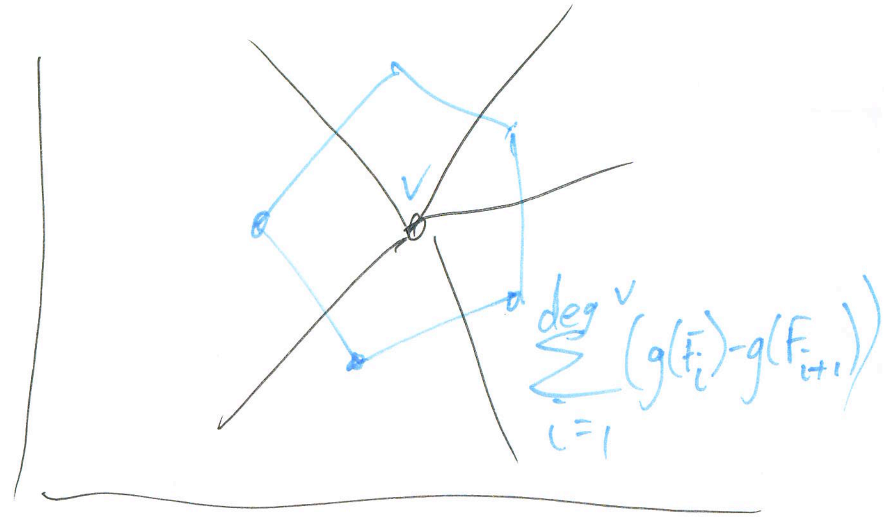


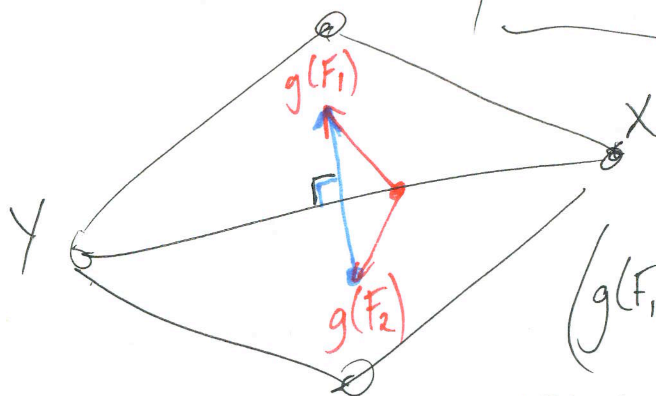
Given oriented e between F_1, F_2

$$f(e) = g(F_1) - g(F_2)$$

where F_1 is on the right

$\forall x \in e$ along e, $h_1(x) = h_2(x)$





$$(g(F_1) - g(F_2)) \cdot (x - y) = 0$$

$$\nabla h_1 (x-y) - \nabla h_2 (x-y) = 0 \quad \Leftarrow$$

$$\Longleftrightarrow \nabla h_1 (x-y) = \nabla h_2 (x-y)$$