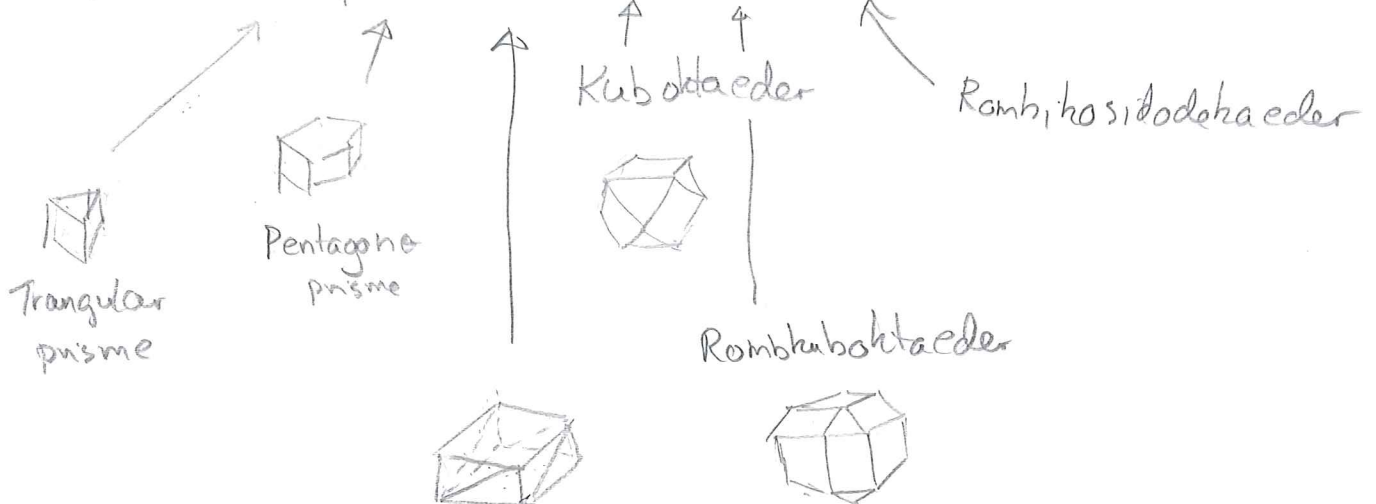


3-kanter	1		3	3	1	1
4-kanter	2	2	1		3	2
5-kanter		1		1		1
hjørner	6	10	8	12	24	60
kanter	9	15	16	24	48	120
flater	5	7	10	14	26	62



skævt dodekaeder 4 3-kanter
1 5-kanter

$$V^* = 2\pi - 4 \cdot \frac{\pi}{3} - \frac{3\pi}{5} = \frac{30 - 20 - 9}{15} \pi = \frac{\pi}{15}$$

$$V = 60 \quad e = 150 \quad f = 92$$

12 5-kanter
80 3-kanter

Austumpet ikosidodekaeder

Mangekant

$$6 \overline{) 4} \\ 10$$

$$2\pi - \frac{2\pi}{n} = \pi \frac{n-2}{n} = \frac{\pi}{10}$$

1 4-kant	90	30
1 6-kant	120	20
1 10-kant	144	12

$$V^* = 2\pi - \frac{\pi}{2} - \frac{2\pi}{3} - \frac{4\pi}{5} \\ = \frac{60 - 15 - 20 - 24}{30} \pi = \frac{\pi}{30}$$

$$V = 120 \quad e = 180 \quad f = 62$$

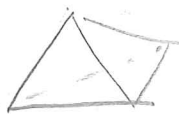
Men $p, q \geq 3$

$$(p-2)(q-2) < 4$$

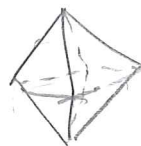
Muligheter

p	q	$(p-2)(q-2)$	v	e	f
3	3	1	4	6	4
4	3	2	8	12	6
3	4	2	6	12	8
5	3	3	20	30	12
3	5	3	12	30	20
4	4	4	Nei		
6	3	4	Nei		

$\{3,3\}$ Tetraeder



$\{3,4\}$ Oktaeder



$\{4,3\}$ Kube



$\{5,3\}$ Dodekaeder



$\{3,5\}$ Ikosaeder



Archimediske legemer (semi-regulære)

- satt sammen av to eller flere typer mangekanter
- alle hjørnekonfigurasjoner er like

$\Rightarrow$ Vinkel-defekt må dele 4π .

	2	2	1	1	1			3	3	2	2	2	1	1
3-kanter								1		2	1		3	2
4-kanter	1		2	1		2	1		1		1	2		1
5-kanter		1		1	2	1	2							
6-kanter														
	$\frac{5\pi}{6}$	$\frac{11\pi}{15}$	$\frac{2\pi}{3}$	$\frac{17\pi}{30}$	$\frac{7\pi}{15}$	$\frac{2\pi}{5}$	$\frac{3\pi}{10}$	$\frac{\pi}{2}$	$\frac{2\pi}{5}$	$\frac{\pi}{3}$	$\frac{7\pi}{30}$	$\frac{8\pi}{15}$	$\frac{\pi}{6}$	$\frac{\pi}{15}$
	x	x	6	x	x	10	x	8	10	12	x	x	24	60

Ekamen H19, oppgave 5

a) P $V=12$
konvekst $e=24$ Eulers formel $12-24+f=2 \Rightarrow f=14$
polyed $f=?$

b) P
trekanter $f_3 =$
firkante f_4
 V har $f_3 + f_4 = 14$
Antall kanter $3f_3 + 4f_4 = 2 \cdot 24 = 48$
Må løse $f_3 + f_4 = 14$
 $3f_3 + 4f_4 = 48$
 $\Rightarrow \underline{f_4 = 6, f_3 = 8}$

Ekamen H06, oppgave 3

$$9x^2 + 4y^2 - 18x - 4y - 6 = 0$$

Fullstendige kvadrat

$$9(x^2 - 2x + 1) + 4(y^2 - y + \frac{1}{4}) - 6 - 9 - 1 = 0$$

$$9(x-1)^2 + 4(y-\frac{1}{2})^2 = 16$$

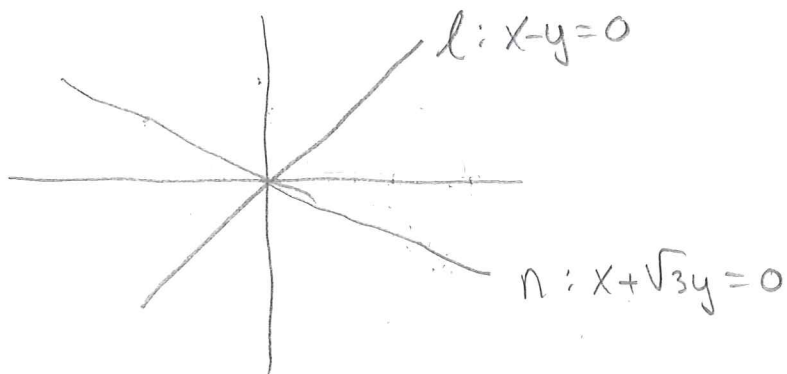
$$\frac{9}{16}(x-1)^2 + \frac{1}{4}(y-\frac{1}{2})^2 = 1$$

$$\frac{(x-1)^2}{(\frac{4}{3})^2} + \frac{(y-\frac{1}{2})^2}{2^2} = 1 \quad a = \frac{4}{3} \quad b = 2$$

$$\Rightarrow c^2 = b^2 - a^2 = 4 - \frac{16}{9}$$

$$\Rightarrow e = \frac{\sqrt{\frac{20}{9}}}{2} = \underline{\underline{\frac{\sqrt{5}}{3}}}$$

H06, Oppgave 4.



Refleksjon om l :

$$\begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix}$$

Rotasjon med vinkel $\frac{\pi}{6}$

til $(\sqrt{3}, 1)$

$$\begin{pmatrix} \frac{\sqrt{3}}{2} & -\frac{1}{2} \\ \frac{1}{2} & \frac{\sqrt{3}}{2} \end{pmatrix} \begin{pmatrix} \sqrt{3} \\ -1 \end{pmatrix} = \begin{pmatrix} 2 \\ 0 \end{pmatrix}$$

dvs n til x -aksen.

Refleksjon om x -aksen $\begin{pmatrix} 1 & 0 \\ 0 & -1 \end{pmatrix}$

$$Ref_n \circ Ref_l$$

$$= \begin{pmatrix} \frac{\sqrt{3}}{2} & \frac{1}{2} \\ -\frac{1}{2} & \frac{\sqrt{3}}{2} \end{pmatrix} \begin{pmatrix} 1 & 0 \\ 0 & -1 \end{pmatrix} \begin{pmatrix} \frac{\sqrt{3}}{2} & -\frac{1}{2} \\ \frac{1}{2} & \frac{\sqrt{3}}{2} \end{pmatrix} \begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix}$$

$$= \begin{pmatrix} \frac{\sqrt{3}}{2} & -\frac{1}{2} \\ -\frac{1}{2} & -\frac{\sqrt{3}}{2} \end{pmatrix} \begin{pmatrix} -\frac{1}{2} & \frac{\sqrt{3}}{2} \\ \frac{\sqrt{3}}{2} & \frac{1}{2} \end{pmatrix} = \begin{pmatrix} -\frac{\sqrt{3}}{2} & \frac{1}{2} \\ \frac{1}{2} & -\frac{\sqrt{3}}{2} \end{pmatrix}$$

$$= R_{\frac{7\pi}{6}}$$

$$\cos \frac{7\pi}{6} = -\frac{\sqrt{3}}{2}$$

$$\sin \frac{7\pi}{6} = -\frac{1}{2}$$

Vinkelen mellom l og n er $\frac{5\pi}{6} - \frac{\pi}{4} = \frac{10-3}{12}\pi = \frac{7}{12}\pi$.

$$\text{Gir rotasjon } 2 \cdot \frac{7}{12}\pi = \underline{\underline{\frac{7}{6}\pi}}$$