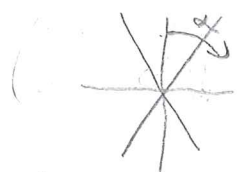


Kegle: $z^2 = x^2 + y^2$

- Flytte toppunktet til $z=1$

$$(z-1)^2 = x^2 + y^2$$

- Bilde med vinkel α i xz-planen



$$\begin{pmatrix} 0 \\ 1 \end{pmatrix} \mapsto \begin{pmatrix} \sin \alpha \\ \cos \alpha \end{pmatrix}$$

$$\begin{pmatrix} 1 \\ 0 \end{pmatrix} \mapsto \begin{pmatrix} \cos \alpha \\ -\sin \alpha \end{pmatrix}$$

$$\begin{pmatrix} \cos \alpha & \sin \alpha \\ -\sin \alpha & \cos \alpha \end{pmatrix} \begin{pmatrix} x \\ z \end{pmatrix} = \begin{pmatrix} x' \\ z' \end{pmatrix}$$

$$\Rightarrow \begin{pmatrix} x \\ z \end{pmatrix} = \begin{pmatrix} \cos \alpha & -\sin \alpha \\ \sin \alpha & \cos \alpha \end{pmatrix} \begin{pmatrix} x' \\ z' \end{pmatrix}$$

Snitte keglen med $z=0$.

$$(\sin \alpha x + \cos \alpha z - 1)^2 = (\cos \alpha x - \sin \alpha z)^2 + y^2$$

$$\sin^2 \alpha x^2 - 2 \sin \alpha x + 1 = \cos^2 \alpha x^2 + y^2$$

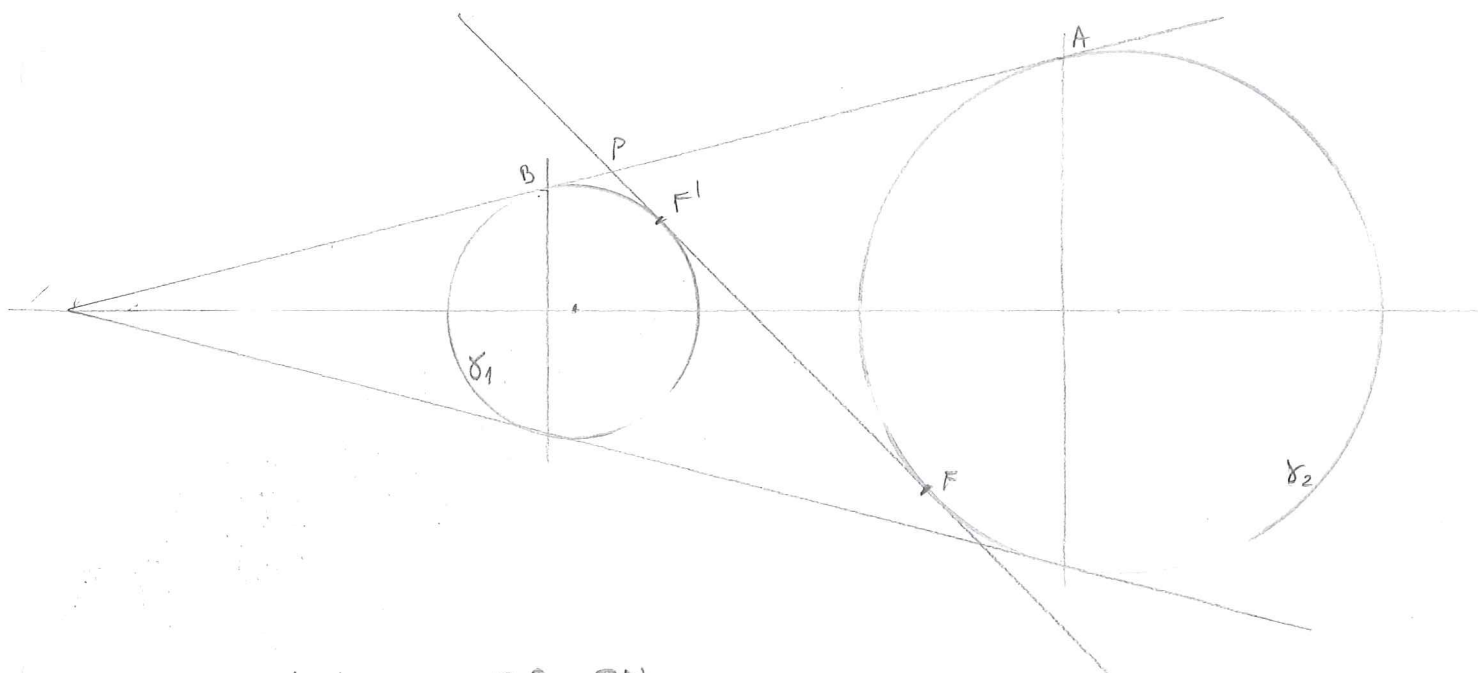
$$\Rightarrow \cos 2\alpha x^2 + 2 \sin \alpha x + y^2 - 1 = 0$$

$$\alpha = \frac{\pi}{4} \Rightarrow \cos(2 \cdot \frac{\pi}{4}) = \cos(\frac{\pi}{2}) = 0 \quad \sqrt{2}x + y^2 - 1 = 0 \quad \text{Parabel}$$

$$\alpha < \frac{\pi}{4} \Rightarrow 2\alpha < \frac{\pi}{2} \Rightarrow \cos 2\alpha > 0 \quad \text{Ellipse}$$

$$\text{f. eks } \alpha = 0 \text{ gir } x^2 + y^2 - 1 = 0$$

$$\alpha > \frac{\pi}{4} \Rightarrow 2\alpha > \frac{\pi}{2} \Rightarrow \cos 2\alpha < 0 \quad \text{Hyperbel}$$

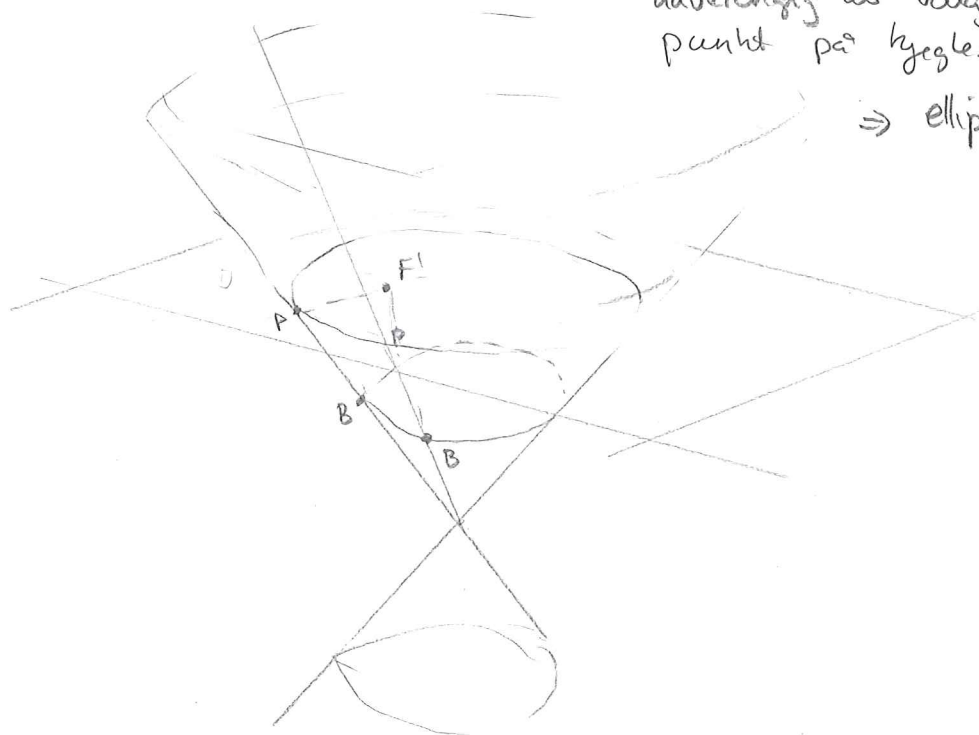


V_1 har $BP = PF'$
 $AP = PF$

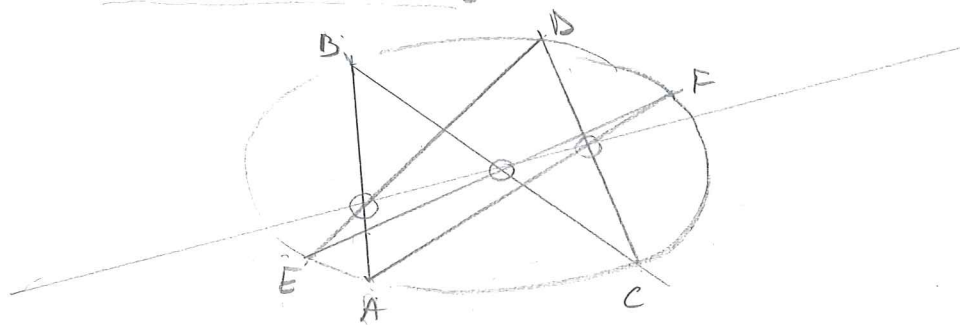
$$\Rightarrow PF + PF' = AP + BP = AB.$$

uafhængig af valg af
 punkt på kgesnit.

$\Rightarrow$ ellipse



Pascals setning



Konstruksjon av tangent i punkt på ellipsen $P=E=F$

