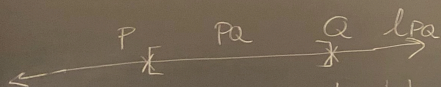


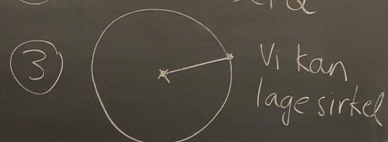
MAT2500
Forelesningsnotater
23.08.2022

EUKLID

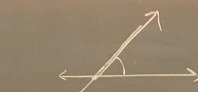


① Rett linjestykke PQ

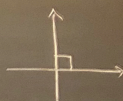
② Danne lpa



Vi kan
lage sirkel

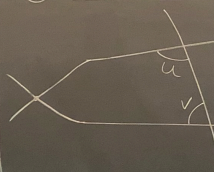


④ Alle rette vinkler er like



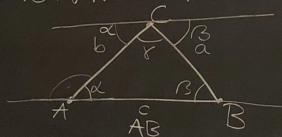
⑤ Parallellpostulatet

Kan byttes ut

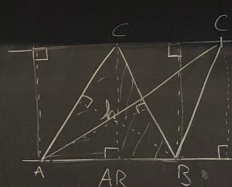


Hvis to linjer snittes av en tredje linje slik at $u+v$ er 180° mindre enn to rette vinkler da vil linjene skjære hverandre på den siden

TREKANTER



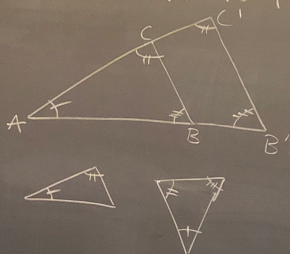
$$\alpha + \beta + \gamma = \pi$$



$$A_{\Delta} = \frac{1}{2} \cdot AB \cdot h$$

$\Delta ABC'$ har samme areal som ΔABC

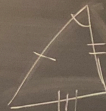
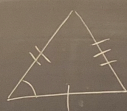
FORMLIKHET



$$\frac{AB}{AB'} = \frac{BC}{BC'} = \frac{AC}{AC'}$$

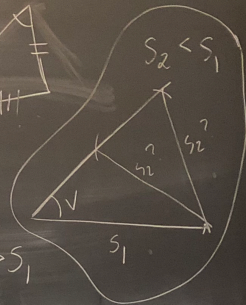
VVV

KONGRUENS

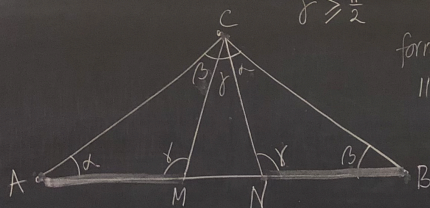


SSS
SVS
VSV
VS, S₂

der $S_2 > S_1$



FORMLIKHET KONSEKVENSS I



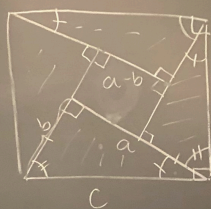
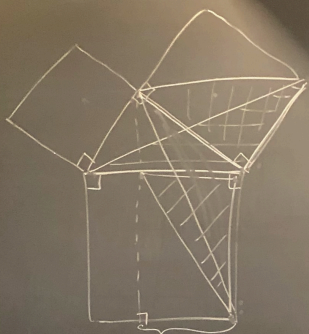
$$\delta \geq \frac{\pi}{2}$$

$\triangle ABC$
formlik $\triangle ACM$
|| $\triangle CBN$

$$\frac{AC}{AB} = \frac{AM}{AC}, AC^2 = AB \cdot AM$$

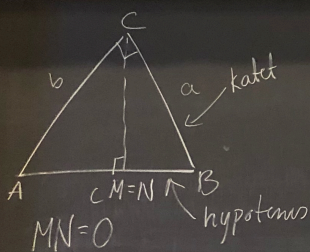
$$\frac{BC}{AB} = \frac{BN}{BC}, BC^2 = AB \cdot BN$$

Tillsammen, $AC^2 + BC^2 = AB (AM + BN)$
 $= AB (AB - MN)$



$$c^2 = 4 \cdot \frac{1}{2} \cdot a \cdot b + (a-b)^2$$

$$= a^2 + b^2$$



PYTAGORAS

$$AC^2 + BC^2 = AB^2$$

PYTAGORAS

$$a^2 + b^2 = c^2$$

$$k_1^2 + k_2^2 = h^2$$

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

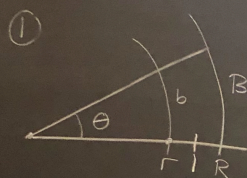
$\Leftrightarrow$

$\triangle$ er retthjinklet

SETNING

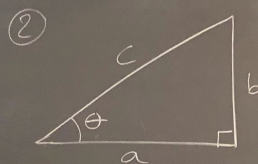
PRP 47: I retthjinklede trekanter er kvadratet av siden motstående til den rette vinkelen lik summen av kvadratene på sidene som danner den rette vinkelen.

FORMLIKHET KONSEKVEN 2



$$\frac{b}{r} = \frac{B}{R}$$

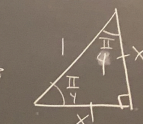
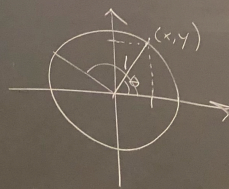
$$\pi: \frac{O}{d}$$



$$\cos \theta = \frac{a}{c}$$

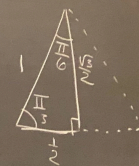
$$\sin \theta = \frac{b}{c}$$

$$\tan \theta = \frac{\sin \theta}{\cos \theta} = \frac{b}{a}$$



$$2x^2 = 1$$

$$x = \frac{1}{\sqrt{2}} = \cos \frac{\pi}{4}$$



DET EUKLIDSKE PLANET, $\mathbb{R}^2 \leftarrow n$, afstand, vinkler

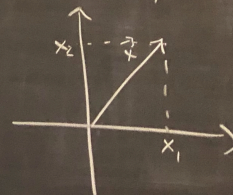
DEF 21. La $\vec{x}, \vec{y} \in \mathbb{R}^2$ s.a. $\vec{x} = (x_1, x_2)$
 $\vec{y} = (y_1, y_2)$

• PRIKKPROD: $\vec{x} \cdot \vec{y} = x_1 y_1 + x_2 y_2$

• NORM $\|\vec{x}\| = \sqrt{\vec{x} \cdot \vec{x}} = \sqrt{x_1^2 + x_2^2}$

• DEN EUKLIDSKE AVSTANDEN fra $\vec{x}$ til $\vec{y}$. $d(\vec{x}, \vec{y}) = \|\vec{x} - \vec{y}\|$

• VINKEL mellem $\vec{x}$ og $\vec{y}$. $\cos \theta = \frac{\vec{x} \cdot \vec{y}}{\|\vec{x}\| \|\vec{y}\|}$



$$= \sqrt{(x_1 - y_1)^2 + (x_2 - y_2)^2}$$