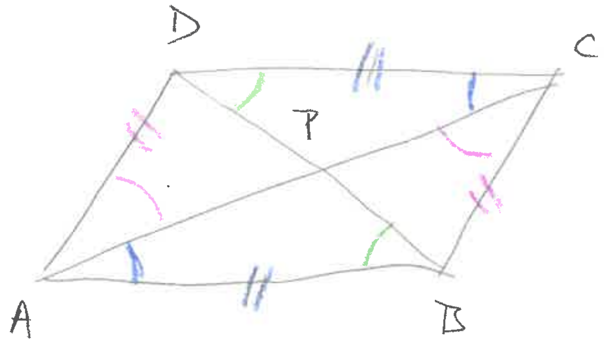
ZÁKLADY PLANIMETRIE

1)



a) $\triangle ACD \cong \triangle CAB$ (usu)

střídavé
střídavé

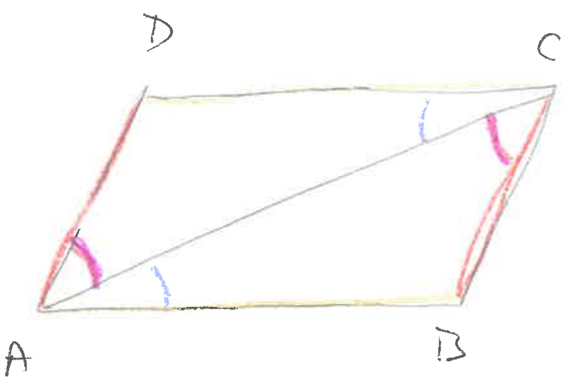
$\Rightarrow$ $\boxed{|CD| = |AB|}$

$|AD| = |CB|$

b) $\triangle ABP \cong \triangle CDP$ (usu)

střídavé $\Rightarrow$ $|AP| = |CP|$

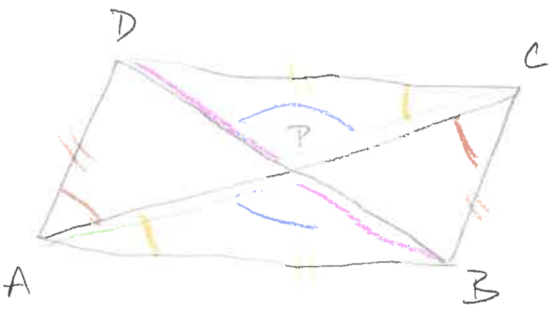
střídavé $|BP| = |DP|$



$ACD \cong CAB$ (sss)

$\Rightarrow |\sphericalangle ACD| = |\sphericalangle CAB| \Rightarrow AB \parallel CD$

$|\sphericalangle DAC| = |\sphericalangle BCA| \Rightarrow BC \parallel AD$



$\triangle ABP \cong \triangle CDP$ (sus)

$\Rightarrow \sphericalangle \Rightarrow \parallel$

$\triangle BCP \cong \triangle DAP$ (sus)

$\Rightarrow \sphericalangle \Rightarrow \parallel$

střídavé
vrcholové

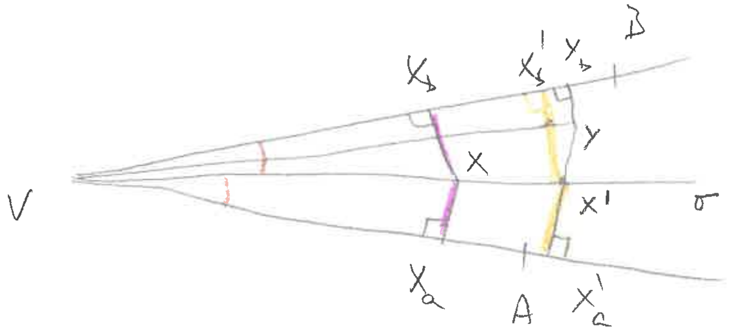
$\Rightarrow \triangle ABP \cong \triangle CDP$ (usu)

$\Rightarrow |BP| = |DP|$

$|AP| = |CP|$ $\Rightarrow$

$\Rightarrow \triangle BCP \cong \triangle DAP$ (sus) $\Rightarrow \sphericalangle \Rightarrow BC \parallel AD \Rightarrow$ rovnoběžník

2)



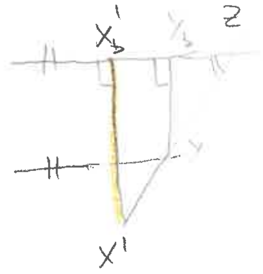
$\triangle XVX_a \cong \triangle XVX_b$ (usu)

$\Rightarrow |XX_a| = |XX_b|$

+ všech

$Y \notin \sigma$, BÚNO:

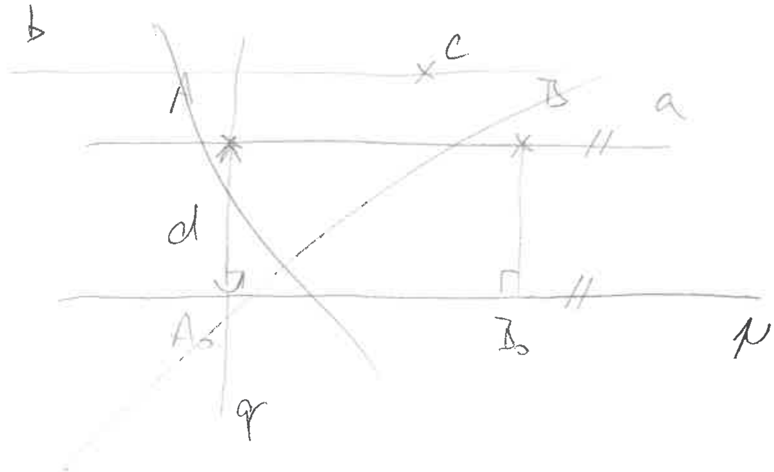
Y leží v úhlu XVB



$\triangle ZYY_b \sim \triangle ZX'X'_b$ (uu)

$\Rightarrow |YY_b| < |X'X'_b| = |X'X'_a| < |YX'_a|$

3)



Nechť $d = |AA_0|$

$A \in a \parallel p$, $B \in a$

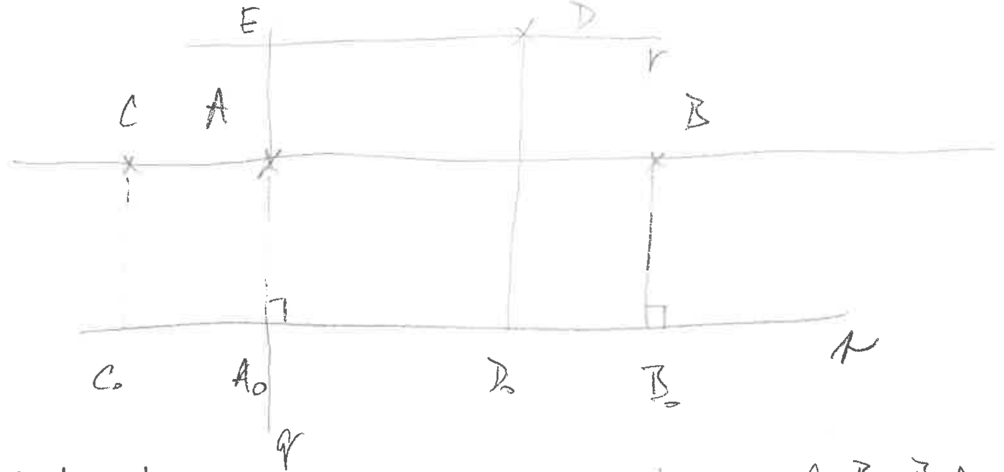
$\Rightarrow A_0B_0BA$ je rovnob.

$\Rightarrow |AA_0| = |BB_0| = d$

$C \notin a$

$C \in q$ $|CA_0| \neq d$

uvažujme v 1 polorovině



obdélník → spec. případ rovnoběžníka

$A_0 \in p \cap q$

$A \in q \perp p$

$|AA_0| = |BB_0| = d$

$A, B \in$ ~~po~~ téže polorovině s hr. přímkou p } → A_0B_0BA je rovnoběžník

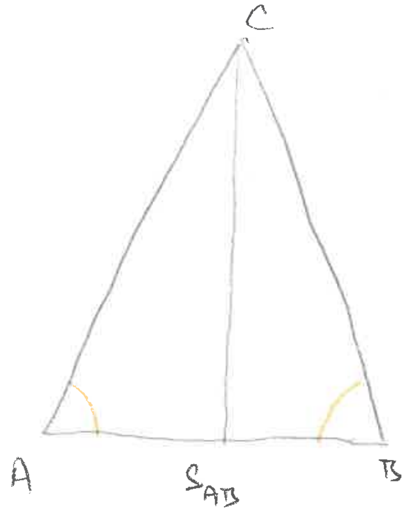
$\Rightarrow \overleftrightarrow{AB} \parallel p$

$C \in p \Rightarrow C_0A_0AC$ je rovnob. $\Rightarrow |AA_0| = d = |CC_0|$

$D \notin p \Rightarrow r \parallel p$, $D \in r$ ↓ 5. postulát

ozn. $E \in q \cap r \Rightarrow E \neq A \Rightarrow |EA_0| \neq d \Rightarrow |DD_0| \neq d$ (A_0D_0DE je rovnob.)

4) Nechť $|AC| = |BC|$



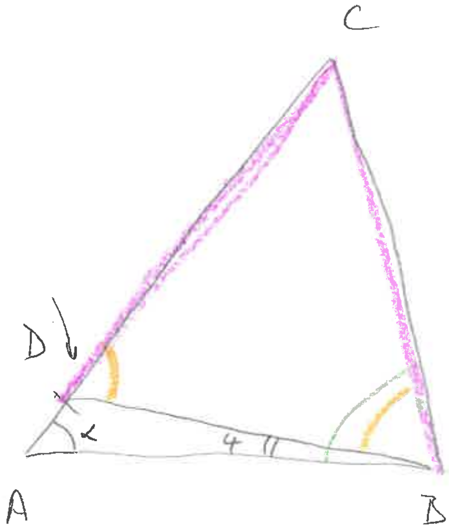
$A S_{AB} C \cong B S_{AB} C$ (sss) $\Rightarrow$ ∢

Nechť $|AC| > |BC|$

vnější v ΔABD

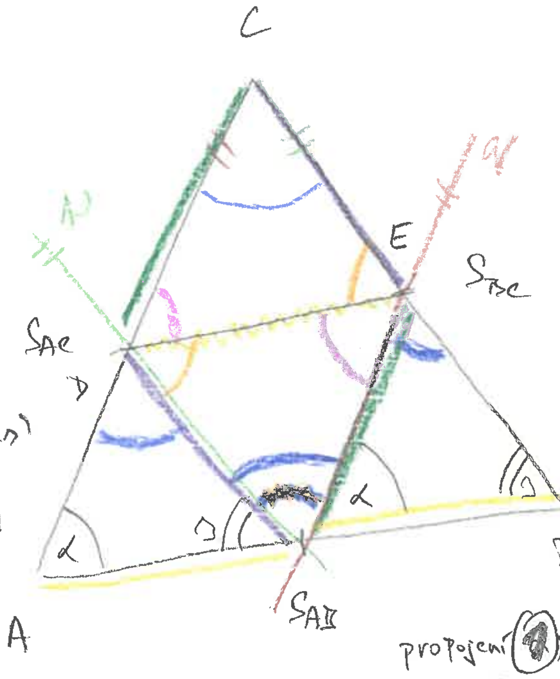
$\varphi = |\sphericalangle BDC| = \alpha + \psi$

$\Rightarrow \alpha < \varphi < \beta$



$\beta > \varphi$

5)



ozn. $D \in p \cap AC$

$E \in q \cap BC$

Chceme dk., že $D = S_{AC}$

$E = S_{BC}$

$|DE| = |AS_{AB}|$

střed

souh.

(4)

↓

(3) $\Delta AS_{AB}D \cong \Delta DEC$ (usu)

$\Rightarrow |AS_{AB}| = |DE|$

(1) $\Delta DEC \cong \Delta ED S_{AB}$ (usu)

$\Rightarrow \underbrace{|EC| = |D S_{AB}|}_{(1')}, \quad |DC| = |E S_{AB}|$ (1)

α ... souhl.

β ... —||—

propojení (1) (2)

(1) $\wedge$ (2) $\Rightarrow |AD| = |DC| \Rightarrow D$ je střed AC

(1') $\wedge$ (2') $\Rightarrow |EC| = |BE| \Rightarrow E$ je střed BC

(2) $\Delta A S_{AB} D \cong \Delta S_{AB} B E$ (usu)

$|AD| = |S_{AB} E|$ (2) $\quad |S_{AB} D| = |BE|$ (2')

$D = S_{AC}, \ E = S_{BC}$