HW 7 — Page 1

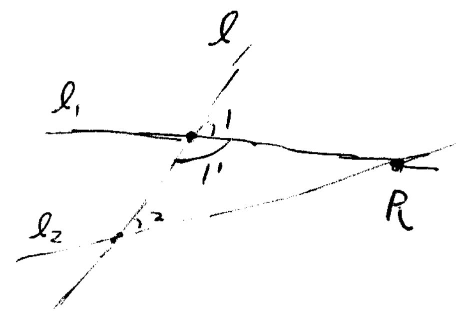
Sec 3.4.

Prob 2:

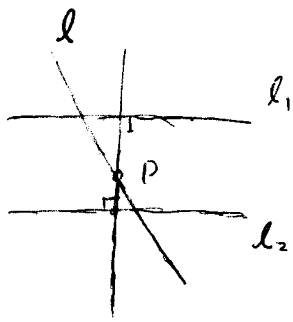
Proof: By contradiction,

If l_1 intersect l_2 at R,

then $\angle 1 > \angle 2$.

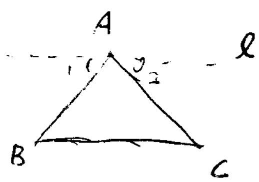


Prob 3.



Proof: from $\forall P \in l$, draw perpendicular line to l_1, l_2.

Prob 11:



Proof: from A, draw a line paraller to BC,

then $\angle ABC = \angle 1$, $\angle ACB = \angle 2$

$\therefore\ m\angle A + m\angle B + m\angle C = \angle 1 + \angle BAC + \angle 2 = 180°$

Sec 3.5.

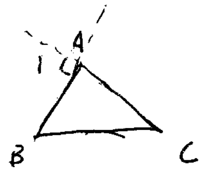
Prob 1.

Proof: Just by cut this quadrilateral to two triangles.

Then use Th. 3.5.1.

HW4 – Page 2

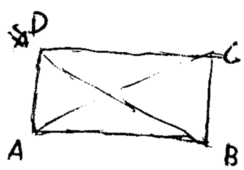
Prob 2:

Proof: 

$$\begin{cases} \angle 1 + \angle BAC = 180^\circ \\ \angle ABC + \angle ACB + \angle BAC \leq 180^\circ \end{cases} \Longrightarrow \angle 1 \geq \angle ABC + \angle ACB.$$

Sec 3.6.

Prob 2:

Proof: 

$$\begin{cases} AD = BC \\ AB = AB \\ \angle DAB = \angle CBA = 90^\circ \end{cases} \Longrightarrow \triangle DAB \cong \triangle CBA \ (SAS)$$

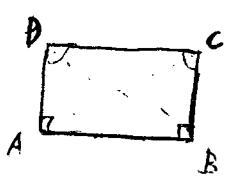
$\therefore\ BD = AC.$

Prob 3:

Proof: Figure as previous problem (prob 2).

$$\begin{cases} CD = CD \\ AD = CB \\ AC = BD \ (\text{prob } 2) \end{cases} \xrightarrow{SSS} \triangle ACD \cong \triangle BCD \Longrightarrow \angle ADC = \angle BCD$$

Prob 7:

Proof: 

By contradiction,

If $AD > BC$, then $\angle DBA > \angle CAB$

$\Longrightarrow \angle DAC > \angle DBC$.

since $\angle D = \angle C$, $(CD = CD)$

$\therefore$ from $\angle DAC > \angle DBC \Longrightarrow AD < BC$!