MA484   wk 5   mon ——————————————————

Homework Hints :
  Goal: Prove the Pyth Thm $a^2 + b^2 = c^2$ is   not true   in Hyperbolic Geom.

Main Tool : Saccheri Quadrilateral :
                     - Four sided (each side is   a 'line')
                     - exactly two right angles.

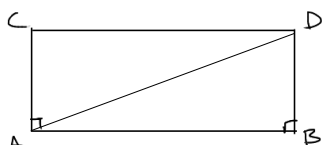$\triangle$ Congruence theorems:
Any* theorem of Book 1 of the
Elements that is before I.29.
(any thm that does not
   depend on I.V)
eg, vertical angles

(HAA : hypothesis of acute angles)
    - assumption that the two summit angles (angles @ top, opposite the right
      angles) are   not   both right.

If this is a Saccheri Quad (i.e, if you are assuming HAA)
      then $\angle C \neq \angle A$ $\angle D \neq \angle B$.

Proof by contradiction
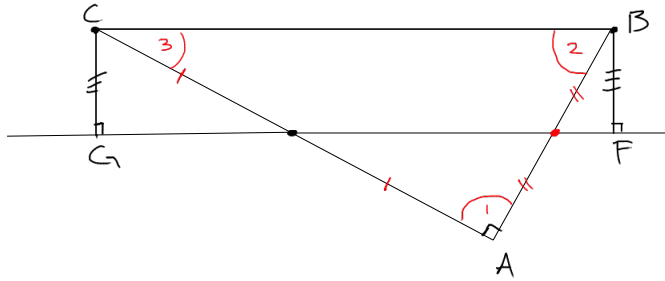ABWOC ; $\overline{CD} = \overline{AB}$
         $\S$
         ∇
show $\angle C = \angle B$

Hints / Background ~ 32 - 34 _____

Goal: Prove Pythag. Thm fails under HAA

Assume HAA, let △ABC be any given (Right triangle.

1. Take midpoints of AC, AB
2. connect the midpts, w/ ℓ
3. Raise ⊥ line from line ℓ to B & C

4. given any △, you've created the corresp. Saccherri Quad

5. $\overline{GF} \neq \overline{CB}$ by #31

#32: Show

$\angle 1 + \angle 2 + \angle 3 = \angle GCB + \angle FBC$