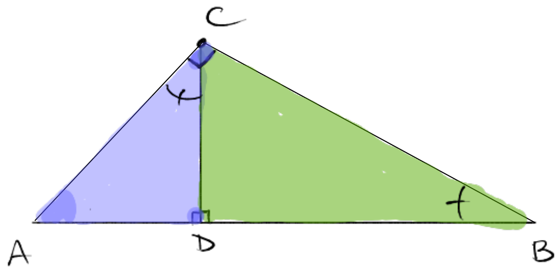
Homework: Email (Wednesday)
(see Web)

1. Last Euclidean Theorem. (Pythagorean Theorem) (Hundreds of Proofs).

2. Assignment: (Due Friday)
   (i) Pick your favorite proof of Pythag. Thm
   (ii) Present this (virtual)
      (a) create visual (Power point, Latex, Pencil/paper + CamScanner) (1 page)
      (b) present this: Live (Friday)
         or
         Record & submit

Pythagorean theorem

If $\triangle ACB$ is a right $\triangle$, then $AB^2 = AC^2 + BC^2$



proof: uses similar $\triangle$'s.

1. Know $\angle ACB = 90°$
2. Drop $\perp$ to AB from C, $\angle ADC \cong \angle BDC \cong 90°$
3. So we have 3 similar $\triangle$'s.

$$\frac{\text{hyp}}{\text{leg}} = \frac{AC}{AD} = \frac{AB}{AC} \quad \& \quad \frac{BC}{DB} = \frac{AB}{BC}$$

$\triangle ACB \sim \triangle ADC$ $\qquad$ $\triangle BDC \sim \triangle ACB$

cross mult. $AC^2 = AD\,AB$

$+ \quad BC^2 = DB\,AB$

$$AC^2 + BC^2 = AD\,AB + DB\,AB = AB(\overbrace{AD + DB}^{AB}) = AB^2$$

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

Similar $\triangle$'s:

AAA:
- All right $\angle$'s $\cong$
- $\angle A$ belongs to both $\triangle ACB$ & $\triangle ADC$
- Euclidean Geom:

small — $90 + \angle A + \angle ACD = 180$

large — $\angle A + \underset{\text{assumption}}{90°} + \angle B = 180$

$\Rightarrow \angle ACD = \angle B$

Question:

Is Pythag thm a Euclidean Result

Our proof uses similar $\triangle$'s. (this is a Eucl. Result) $\Rightarrow$ PY. Thm a Euclidean Idea