Given a quadrilateral ABCD.
from C, a segment CK equal & // AB
and CL = & // to DA.
the same DL, BK, KL, AC, DB

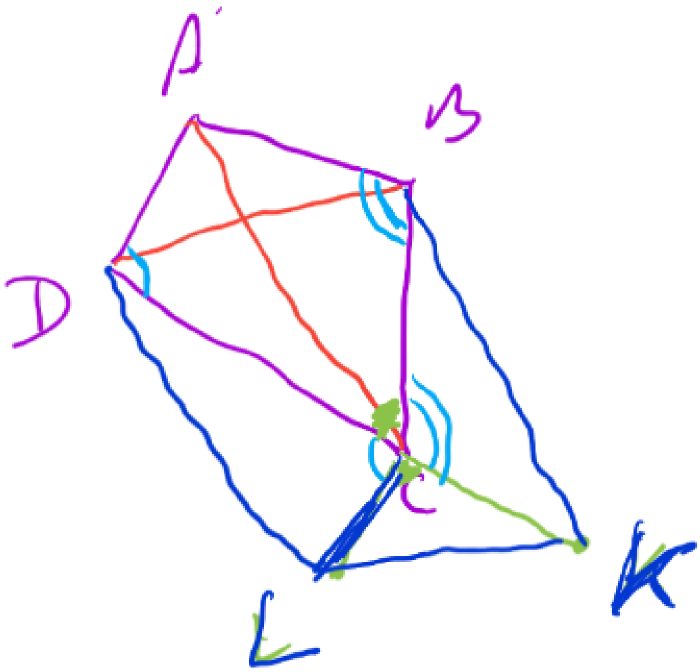
a) Prove that the quadrilateral ACLD, ACKB, DBKL are parallelograms.

b) Demonstrate that the angles are equals:

$L\hat{C}K = D\hat{A}B$, $K\hat{C}B = C\hat{H}A$,

$L\hat{C}D = A\hat{D}C$

solution



D (0, 0)

A (1, 2)

B (3, −1)

C (2, −4)

L (1, −5)

K (4, −6)

a) Given AD // LC

$\Longrightarrow A\hat{D}C = D\hat{C}L$

From 2 △ ADC & DCL

$\begin{cases} AD = CL \\ DC : \text{common} \\ A\hat{D}C = D\hat{C}L \end{cases}$

are equals.

$\Rightarrow$ [illegible] & $AC = $ [illegible]

$\Rightarrow DL \parallel AC$ & AC

therefore $ADCL$ is a parallelogram.

Given $AB \parallel CK$ & $AB = CK$

$\Rightarrow \hat{ABC} = \hat{BCK}$

from 2 $\triangle$ ABC & BCK

$AB = CK$
$\hat{ABC} = \hat{BCK}$
BC (common side)

$\Rightarrow$ 2 $\triangle$ are $\cong$s

$\Rightarrow AC \parallel BK$ & $AC = BK$

$\therefore ABKC$ is a parallelogram.

b/ 2 $\triangle$ ABD & CKL

$AD = CL$ & $AD \parallel CL$
$AB = CK$ & $AB \parallel CK$

$\Rightarrow BD = KL$ & $BD \parallel KL$

$\therefore \hat{DAB} = \hat{LCK}$

On the sides AB & AC of a triangle ABC construct an exterior squares $ABDE$ and $ACFG$. The point reaches E and G, as well the points D & C, B & F.

a) Show that the $\perp$ lower of A at EG is the middle of the triangle ABC.

[illegible] from B & C ~~the~~ to the

b) show that the ~~⊥~~ leading from [illegible] lines DC & BF intersect on the height AH of Δ ABC

c)