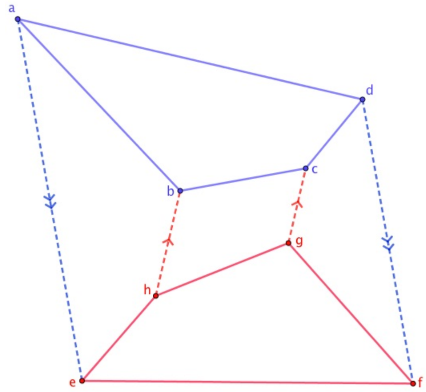

Known results:

(1) *The area of the triangle* abc *is* $\frac{i}{4}(a\bar{b}+b\bar{c}+c\bar{a}-\bar{a}b-\bar{b}c-\bar{c}a)$

(2) *Consider the triangle whose one wertex is* 0, *and the remaining two are* x *and* y.
If h *is the orthocenter of triangle then* $h=\frac{(\bar{x}y+x\bar{y})(x-y)}{x\bar{y}-\bar{x}}$

Solution:

Assume that a *is the origin* $(a=0)$ *in the complex plane and* ac *is the real axis* $(\bar{c}=c)$. *According to (2) we have:*

$$\triangle ABC : e=\frac{(b+\bar{b})(b-c)}{b-\bar{b}},\ \bar{e}=-\frac{(b+\bar{b})(\bar{b}-c)}{b-\bar{b}},\quad \triangle CDA : g=\frac{(\bar{d}+d)(c-d)}{\bar{d}-d};\bar{g}=-\frac{(\bar{d}+d)(c-\bar{d})}{\bar{d}-d},\quad \triangle DAB : h=\frac{(b\bar{d}+\bar{b}d)(b-d)}{b\bar{d}-\bar{b}d};\bar{h}=-\frac{(b\bar{d}+\bar{b}d)(\bar{b}-\bar{d})}{b\bar{d}-\bar{b}d}$$

$$\left.\begin{aligned} DF\perp BC \Leftrightarrow \frac{d-f}{\bar{d}-\bar{f}}=-\frac{b-c}{\bar{b}-\bar{c}} \\ CF\perp BD \Leftrightarrow \frac{c-f}{\bar{c}-\bar{f}}=-\frac{b-d}{\bar{b}-\bar{d}} \end{aligned}\right\} \Longrightarrow \begin{cases} f=\frac{(d+\bar{d}-b-\bar{b})c^2-(d^2+d\bar{d}-b^2-b\bar{b})c+bd\bar{d}+d^2\bar{b}-bd\bar{b}-b^2\bar{d}}{(b+\bar{d}-d-\bar{b})c+d\bar{b}-b\bar{d}} \\ \bar{f}=-\frac{(d+\bar{d}-b-\bar{b})c^2-(\bar{d}^2+d\bar{d}-\bar{b}^2-b\bar{b})c+\bar{b}d\bar{d}+b\bar{d}^2-b\bar{d}\bar{b}-d\bar{b}^2}{(b+\bar{d}-d-\bar{b})c+d\bar{b}-b\bar{d}} \end{cases}$$

[ABCD]=[ABC]+[CDA]=$\frac{i}{4}(b-\bar{b}+\bar{d}-d)c$

After some algebra we get:

[EFGH]=[EFH]+[HFG]=$\frac{i}{4}(e\bar{f}+h\bar{e}-f\bar{e}-e\bar{h}+f\bar{g}+g\bar{h}-g\bar{f}-h\bar{g})=\cdots=\frac{i}{4}(b-\bar{b}+\bar{d}-d)c$