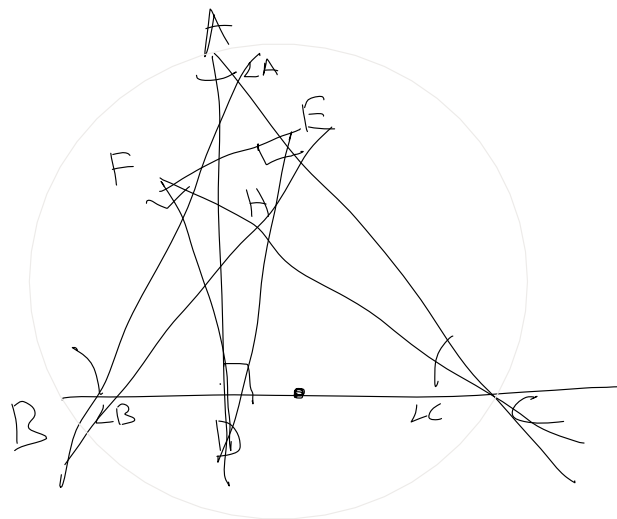HomeWork

Q) Show that
$\triangle AEF$, $\triangle BFD$, $\triangle CDE$

are similar to
$\triangle ABC$.

Ans:-   In quadrilateral $AFHE$

$\angle FAH = \angle FEH$

$\angle HAE = \angle HFE$

$\angle HFE = \angle HFD$

$\angle FEH = \angle HED$

$\angle DFB = 90 - \angle DFH = 90 - x$ (let)

$\angle DEC = 90 - \angle DEB = 90 - y$ (let)

$\angle DEA = 90 + y$ $\angle DAE = x$

$\Rightarrow \angle ADE = 90 - x - y$

$\angle EDC = x + y$ $\angle ECD = 90 - x$

$\angle FDB = x + y$ $\angle FBD = 90 - y$

$\angle FAE = x + y$ $\angle AEF = 90 - y$

$\Rightarrow \angle AFE = 90 - x - y$

In $\triangle AFE$ and $\triangle ABC$,

$\angle A$ is common

$\angle FEC = 180° - \angle B$

$\Rightarrow \angle AEF = \angle B$

$\Rightarrow \angle AFE = \angle C$
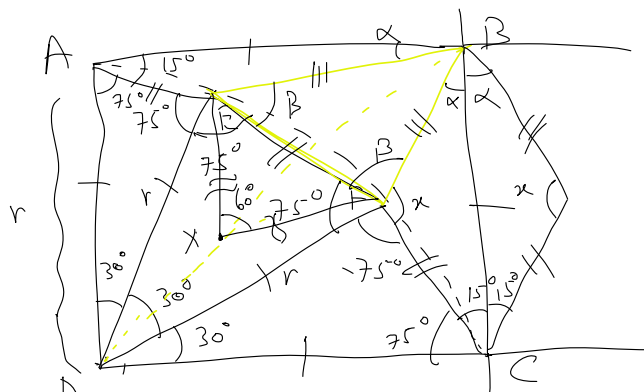
$\Rightarrow \triangle AFE \sim \triangle ABC$

$30° + 150° + 2\beta + 90 - 2\alpha = 360°$
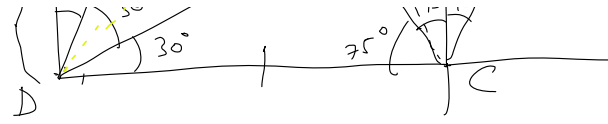
$2\beta - 2\alpha = 90°$

$\beta - \alpha = 45°$

(to be done later)

XEF is equilateral triangle

(to be done later)

triangle

30°

30°

75°

D

C

mirror image
along BC