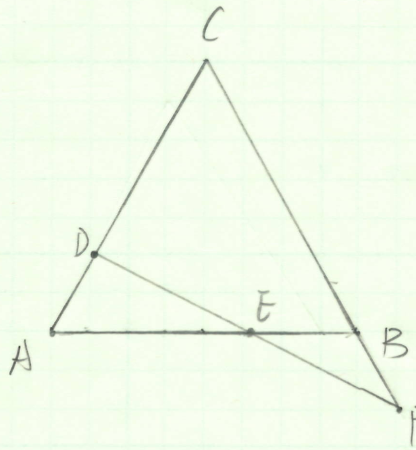
Chen, Yanwen | MA 460 | HW8, Q10.

Given: In $\triangle ABC$, $AC = BC$, $AD = BF$

Prove: need to show $DE = EF$



By Theorem 31, Since in $\triangle DFC$, B, E, A are points on FC, FD and DC and B, E, A are not vertices of $\triangle DFC$, collinear.

Thus, $\frac{BC}{BF} \cdot \frac{ED}{EF} \cdot \frac{AD}{AC} = 1$

By Algebra, since $AC = BC$, $AD = BF$

$$\cancel{\frac{BC}{BF}} \cdot \cancel{\frac{AD}{AC}} \cdot \frac{ED}{EF} = 1 \Rightarrow \frac{ED}{EF} = 1$$

Therefore, $EF = ED$