Euclidean Geometry Example
MEMO

$EF \parallel JI$ (opp sides of parm) ✓

(1) In $\triangle KEF$ and $\triangle KJI$:

$\hat{K}_1 = \hat{K}_3$ (vert opp ∠'s) ✓

$\hat{E}_1 = \hat{I}_1$ (alt ∠'s $EF \parallel JI$)

$\therefore \hat{F}_1 = \hat{J}_2$ (sum ∠'s of $\triangle$)

$\therefore \triangle KEF \parallel\!\parallel\!\parallel \triangle KIJ$ (AAA) ✓

$\therefore \frac{KE}{IK} = \frac{KF}{JK}$ (||| $\triangle$'s)

$EJ \parallel GI$ (opp sides of parm)

(2) In $\triangle GKI$ and $\triangle JKE$

$\hat{K}_2 = \hat{K}_4$ (vert opp ∠'s) ✓

$\hat{E}_2 = \hat{I}_2$ (alt ∠'s $JE \parallel GI$) ✓

$\therefore \hat{J}_1 = \hat{G}$ (int ∠'s of $\triangle$)

$\therefore \triangle KEJ \parallel\!\parallel\!\parallel \triangle KIG$ (AAA) ✓

(3) $\frac{JK}{KG} = \frac{KE}{KI}$ ✓ (||| $\triangle$'s KEJ and KIG) ✓

but $\frac{KE}{IK} = \frac{KF}{JK}$ ✓ (proven in (1))

$\therefore \frac{JK}{KG} = \frac{KF}{JK}$ ✓

$\therefore JK^2 = KG.KF$