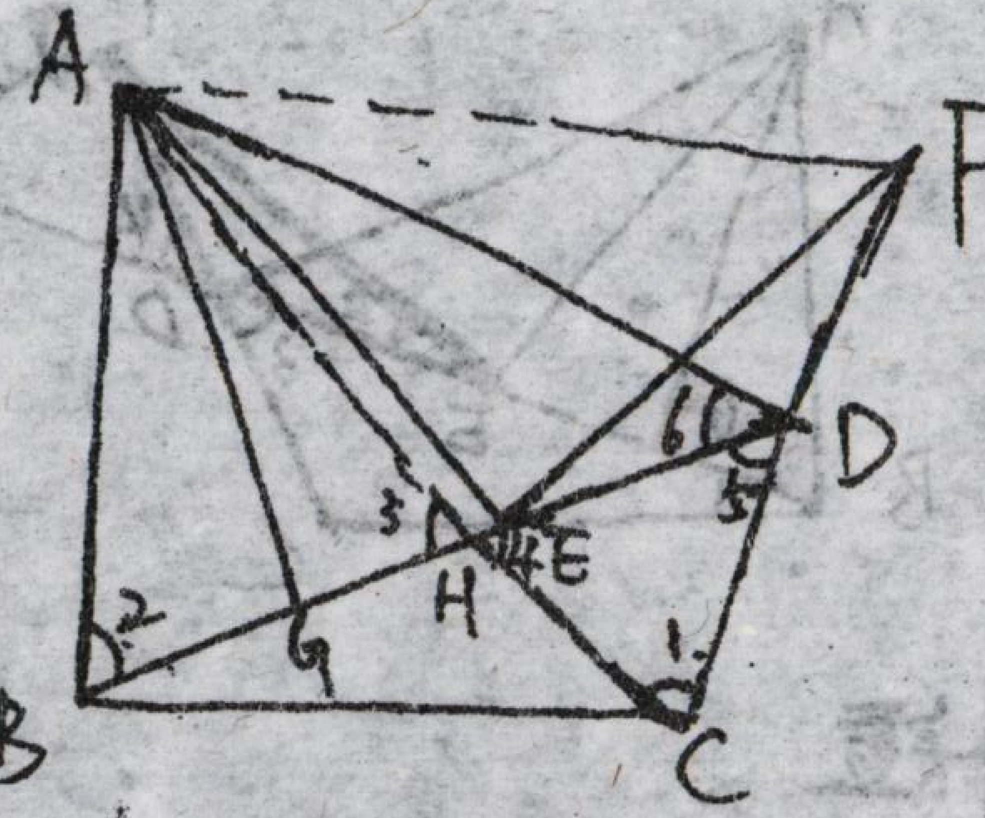
(2)



法三：连结AC、AF

可证：AC = AF

可证△ABH ∽ △ACF

∴∠1 = ∠2

∠3 = ∠4

∴∠BAC = ∠5 = 45°

∴△ABH ∽ △CDH

再证：△ADH ∽ △ACH

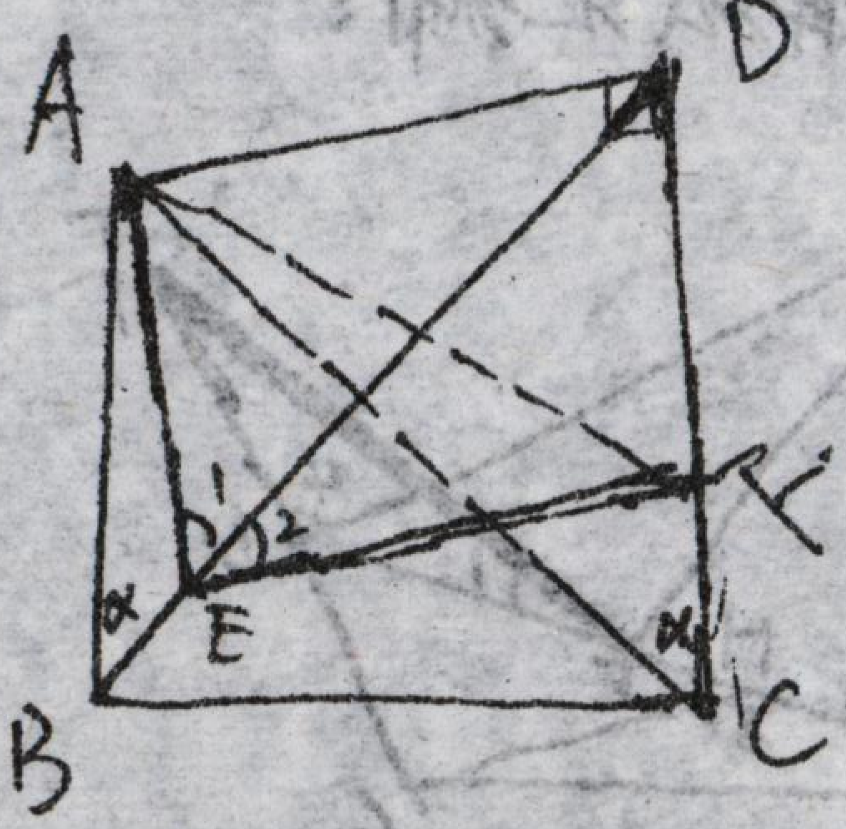
∴∠6 = ∠ACB = 45°

∴∠ADC = ∠4+∠5 = 90°

∴AD ⊥ CF

∴ CD = FD

(3)



法一：连结AC、AF

可证△ABE ∽ △ACF

∴∠ABE = ∠ACF = α

再证：四边形AEFD是正方形

∴∠ADC = 90° AD = DF

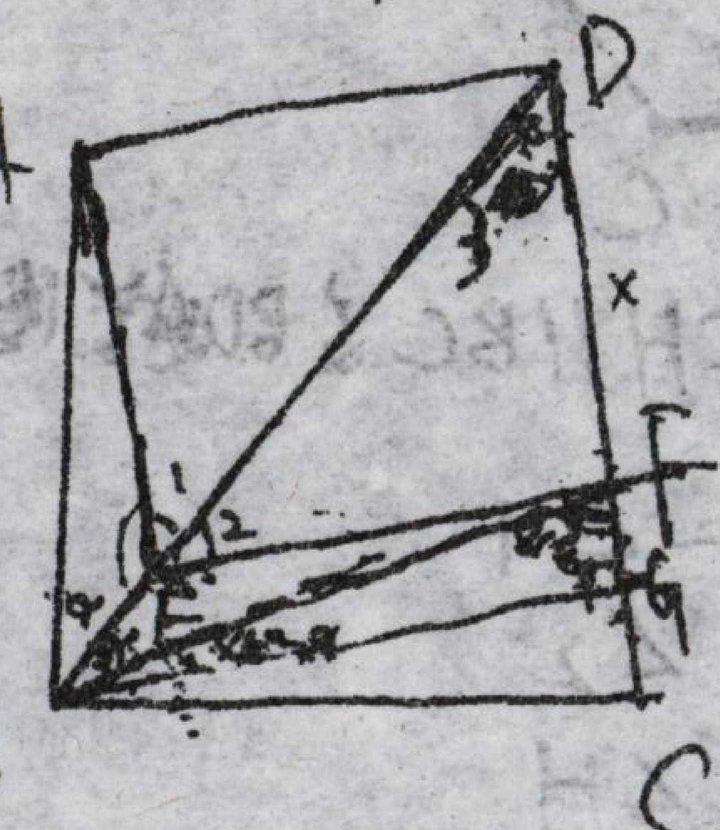
∴在Rt△ADC中

∴ $\tan\alpha = \dfrac{AD}{DC}$

∴ $AD = a\cdot\tan\alpha$

$DF = AD = a\cdot\tan\alpha$

(3)



法二：连结BF，过点B作BG⊥CD

先证：∠1 = ∠2 = 45°

可证△ABE ≌ △BFE

AB = BF = BC

∠3 = ∠BFC − ∠DBF = 45°+α−α = 45°

则 BG = DG

设 DF = x，则 $FG = \dfrac{a-x}{2}$

在Rt△BGF中

$$\tan(45^\circ-\alpha) = \frac{FG}{BG} = \frac{\frac{a-x}{2}}{x+\frac{a-x}{2}}$$

$$DF = \frac{a - a\tan(45^\circ-\alpha)}{1+\tan(45^\circ-\alpha)}$$