

### Elementary triangle geometry

g

Problem: construct a triangle from an angle A, its bisector line h and the opposite side.

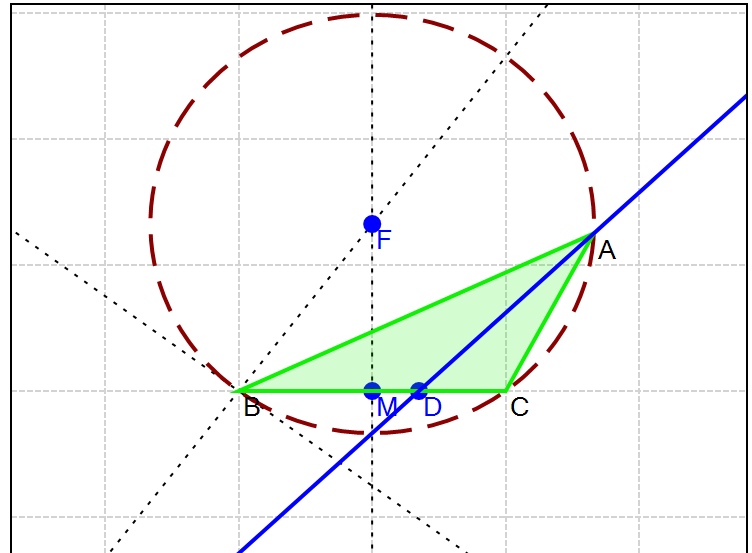
Ref: [https://en.smath.com/forum/yaf\\_postst25461findunread\\_roots-function.aspx](https://en.smath.com/forum/yaf_postst25461findunread_roots-function.aspx)

$z := x + i \cdot y$        $clr := "#2F0FF004"$

$\alpha := 37 \text{ deg}$	Angle A
$B := 0 + 0 \cdot i$	Point B
$C := 4 + 0 \cdot i$	Point C
$D := 2.7 + 0 \cdot i$	$D = h \cap BC$

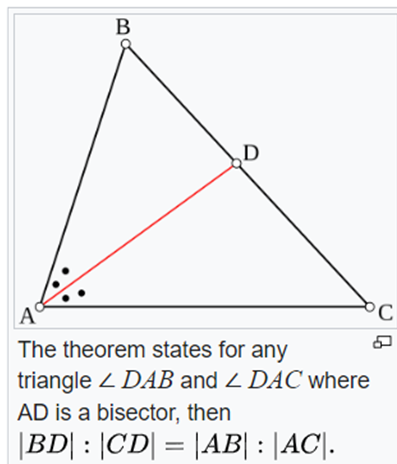
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gXY("Point", "D", ".")
M := 0.5 * (B + C)
gXY("Point", "M", ".")
mu_B := gL(gL(B, C), M)
tg_B := tan(-alpha) * x - y
ptg_B := gL(tg_B, B)
F := gN(mu_B, ptg_B)
Pi := gXY("Point", "F", ".")
Arc_F := |F - z| - |F - B|
BT := (|(x + i * y) - B| * |B - D|) / (|(x + i * y) - C| * |C - D|)
A := eval(xy2z(FindRoot([Arc_F, BT], [4])))
gXY("Poly", ["A", "B", "C"], clr)
h := gB(gL(A, C), gL(A, B))
    
```



II

BT: Bisector theorem:  
(from Wikipedia)



Alvaro

appVersion(4) = "1.2.9018.0"