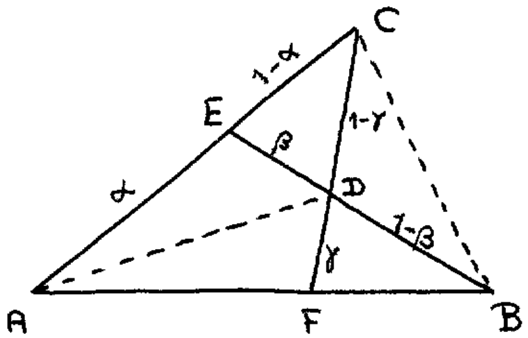
A simple geometrical theorem I did not know



Given:

$$AE = \alpha \cdot AC$$
$$ED = \beta \cdot EB$$
$$FD = \gamma \cdot FC$$

Denoting with (PQR) the area of ΔPQR, we observe

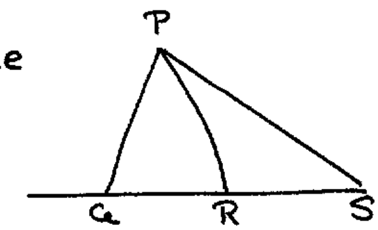
$(ADB) = \gamma \cdot (ACB)$ and also

$$(ADB) = (1-\beta)\cdot(AEB)$$
$$= (1-\beta)\cdot\alpha\cdot(ACB)$$

from which we conclude $\gamma = (1-\beta)\cdot\alpha$.

[The theorem we used thrice – say $(PQR)\cdot\frac{RS}{QR} = (PRS)$ – is no more than adding metric to – see EWD1221b –

$$R \neq S \wedge col.R.S.Q \wedge tri.R.Q.P \Rightarrow tri.R.S.P$$]



The theorem proved in this note is of no importance; it is recorded here because I don't remember this proof technique from my school-days.

Nuenen, 22 December 1995

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