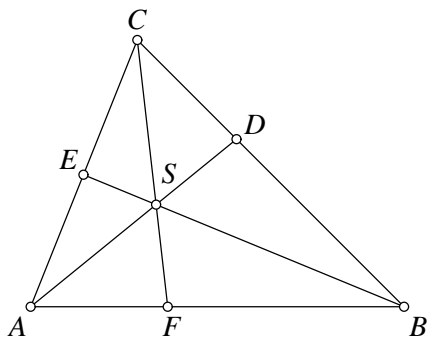


T.1.8 Formeln – L emoine-Punkt



$$AF = \frac{b^2c}{a^2 + b^2}, \quad BD = \frac{c^2a}{b^2 + c^2}, \quad CE = \frac{a^2b}{c^2 + a^2},$$

$$FB = \frac{ca^2}{a^2 + b^2}, \quad DC = \frac{ab^2}{b^2 + c^2}, \quad EA = \frac{bc^2}{c^2 + a^2},$$

$$\frac{AF}{FB} = \frac{b^2}{a^2}, \quad \frac{BD}{DC} = \frac{c^2}{b^2}, \quad \frac{CE}{EA} = \frac{a^2}{c^2},$$

$$AF + BD + CE = \frac{(a + b + c)a^2b^2c^2 + (ab^3 + bc^3 + ca^3)abc}{(b^2 + c^2)(c^2 + a^2)(a^2 + b^2)} + \frac{(b^4c^3 + c^4a^3 + a^4b^3) + (b^2c^5 + c^2a^5 + a^2b^5)}{(b^2 + c^2)(c^2 + a^2)(a^2 + b^2)},$$

$$FB + DC + EA = \frac{(a + b + c)a^2b^2c^2 + (a^3b + b^3c + c^3a)abc}{(b^2 + c^2)(c^2 + a^2)(a^2 + b^2)} + \frac{(b^3c^4 + c^3a^4 + a^3b^4) + (b^5c^2 + c^5a^2 + a^5b^2)}{(b^2 + c^2)(c^2 + a^2)(a^2 + b^2)},$$

$$AD = \frac{bc}{b^2 + c^2} \sqrt{2(b^2 + c^2) - a^2}, \quad BE = \frac{ca}{c^2 + a^2} \sqrt{2(c^2 + a^2) - b^2},$$

$$CF = \frac{ab}{a^2 + b^2} \sqrt{2(a^2 + b^2) - c^2},$$

$$\frac{AS}{SD} = \frac{b^2 + c^2}{a^2}, \quad \frac{SD}{AD} = \frac{a^2}{a^2 + b^2 + c^2}, \quad \frac{AS}{AD} = \frac{b^2 + c^2}{a^2 + b^2 + c^2},$$

$$\frac{BS}{SE} = \frac{c^2 + a^2}{b^2}, \quad \frac{SE}{BE} = \frac{b^2}{a^2 + b^2 + c^2}, \quad \frac{BS}{BE} = \frac{c^2 + a^2}{a^2 + b^2 + c^2},$$

$$\frac{CS}{SF} = \frac{a^2 + b^2}{c^2}, \quad \frac{SF}{CF} = \frac{c^2}{a^2 + b^2 + c^2}, \quad \frac{CS}{CF} = \frac{a^2 + b^2}{a^2 + b^2 + c^2},$$

$$AS = \frac{bc}{a^2 + b^2 + c^2} \sqrt{2(b^2 + c^2) - a^2}, \quad BS = \frac{ca}{a^2 + b^2 + c^2} \sqrt{2(c^2 + a^2) - b^2},$$

$$CS = \frac{ab}{a^2 + b^2 + c^2} \sqrt{2(a^2 + b^2) - c^2},$$

$$SD = \frac{a^2bc}{(a^2 + b^2 + c^2)(b^2 + c^2)} \sqrt{2(b^2 + c^2) - a^2},$$

$$SE = \frac{ab^2c}{(a^2 + b^2 + c^2)(c^2 + a^2)} \sqrt{2(c^2 + a^2) - b^2},$$

$$SF = \frac{abc^2}{(a^2 + b^2 + c^2)(a^2 + b^2)} \sqrt{2(a^2 + b^2) - c^2},$$

$$\sin \angle BAD = \frac{a \sin \gamma}{\sqrt{2(b^2 + c^2) - a^2}}, \quad \sin \angle CAD = \frac{a \sin \beta}{\sqrt{2(b^2 + c^2) - a^2}},$$
$$\sin \angle CBE = \frac{b \sin \alpha}{\sqrt{2(c^2 + a^2) - b^2}}, \quad \sin \angle ABE = \frac{b \sin \gamma}{\sqrt{2(c^2 + a^2) - b^2}}.$$

(Wird fortgesetzt.)