CAGD Ü4

23)

$$k(t) := \sum_{i=0}^{m} D_i(t)\, p_i \qquad \tilde{k}(t) := \sum_{i=0}^{m} D_i(t)\, \alpha(p_i)$$

k ... affin invariant $:\Leftrightarrow \alpha(k(t)) = \tilde{k}(t) \quad \forall t$

zz: affin invariant $\Leftrightarrow \sum_{i=0}^{m} D_i(t) = 1$ $\qquad \alpha$ ... affin $:\Leftrightarrow \alpha(x) = l(x) + v$ mit l ... linear

$$\alpha(k(t)) = \alpha\left(\sum_{i=0}^{m} D_i(t) p_i\right) = l\left(\sum_{i=0}^{m} D_i(t) p_i\right) + v =$$

$$= \sum_{i=0}^{m} (D_i(t)\, l(p_i)) + v$$

$$\tilde{k}(t) = \sum_{i=0}^{m} D_i(t)\, \alpha(p_i) = \sum_{i=0}^{m} D_i(t)(l(p_i) + v) = \sum_{i=0}^{m} D_i(t)\, l(p_i) + \sum_{i=0}^{m} D_i(t)\, v$$

$$= \sum_{i=0}^{m} (D_i(t)\, l(p_i)) + v \sum_{i=0}^{m} D_i(t)$$

affin invariant $\Leftrightarrow \alpha(k(t)) - \tilde{k}(t) = 0 \quad \Leftrightarrow v\left(1 - \sum_{i=0}^{m} D_i(t)\right) = 0$

$$\overset{v \neq 0}{\Leftrightarrow} \sum_{i=0}^{m} D_i(t) = 1$$

Für $v = 0$ gilt das nicht!