$$M_+(K) := \left\{ Y \in \Sigma_+^{n+1} : \operatorname{diag}(Y) = Ye_0 \,;\, Ye_i, Y(e_0 - e_i) \in K \; \forall i \right\}$$

$$N_+(K) := \left\{ Ye_0 : Y \in M_+(K) \right\}$$

$$N_+(P) := \left\{ x \in \mathbb{R}^n : \binom{1}{x} \in N_+(K) \right\}$$

Then $\quad K_I \subseteq N_+(K) \subseteq K,$

and $\quad P_I \subseteq N_+(P) \subseteq P.$

If K is polyhedral (or SDP representable) then optimizing a linear function over $M_+(K)$ is solving an SDP.

Defn. of dual cone: $K^* := \left\{ s \in \mathbb{R}^{n+1} : x^T s \geq 0 \; \forall x \in K \right\}$

$$Q^* := \operatorname{cone}\left\{ e_1, e_2, \dots, e_n, (e_0 - e_1), \dots, (e_0 - e_n) \right\}$$

$$M_+(K) = \left\{ Y \in \Sigma_+^{n+1} : \operatorname{diag}(Y) = Ye_0 \,,\; u^T Y v \geq 0 ,\; \forall\, u \in Q^*, v \in K^* \right\}$$