1. Formulate the following minimization problem as SDP

\[ \min x^6 - 3x^5 + 6x^4 + 2x^3 - 5x^2 + 8x \]

and solve it using cvx.

- Prove: If \( A, B \subseteq \mathbb{R}^n \) are two closed and compact (bounded) convex sets, then \( A + B \) is also a closed convex set.

2. Prove:

- \( (\mathbb{R}^n_+)^* = \mathbb{R}^n_+ \).
- \( \text{SOC}(n)^* = \text{SOC}(n) \).
- \( (S^{n\times n}_+)^* = S^{n\times n}_+ \).