Lemma (Kleene's fixed-point theorem [**davey02**]). Assume $\mathbf{P}$ is a CPO, and $f : \mathbf{P} \to \mathbf{P}$ is Scott continuous. Then the least fixed point of f is the supremum of the Kleene ascent chain

$$\bot \preceq f(\bot) \preceq f(f(\bot)) \preceq \cdots \preceq f^{(n)}(\bot) \leq \cdots .$$