

Lemma (φ is monotone in the valuation). Suppose that $\boldsymbol{v}_1, \boldsymbol{v}_2 : \mathcal{A} \rightarrow \mathbf{DP}$ are two valuations for which it holds that $\boldsymbol{v}_1(a) \leq_{\mathbf{DP}} \boldsymbol{v}_2(a)$. Then $\varphi[\langle \mathcal{A}, \mathbf{T}, \boldsymbol{v}_1 \rangle] \leq_{\mathbf{DP}} \varphi[\langle \mathcal{A}, \mathbf{T}, \boldsymbol{v}_2 \rangle]$.