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Julia F. Knight* (knight.1@nd.edu) and **Charles McCoy**. *Index sets and Scott sentences*. Preliminary report.

For a computable structure \mathcal{A} , there may not be a computable infinitary Scott sentence. When there is a computable infinitary Scott sentence φ , then the complexity of the index set $I(\mathcal{A})$ is bounded by that of φ . Several results on optimal Scott sentences for Abelian p -groups, free groups, and other structures have been arrived at because of the authors' belief that the complexity of the index set should match that of an optimal Scott sentence. In this note, we show that there is not always a perfect match. We show that for a certain subgroup of \mathbb{Q} , there is no computable d - Σ_2 Scott sentence, even though the index set is d - Σ_2^0 . (Received August 26, 2013)