COMP 3010 Week 11 Submission

In the lecture for P vs NP, we discussed the SUBEXP class as a subset of the EXP class. Do you think there is any relation between EXP and SUBEXP? You may want to read up on Exponential Time Hypothesis.

SUBEXP = $O(2^{n^{\varepsilon}})$ Where $\varepsilon > 0$ is a small number
EXP = $O(2^n)$

Exponential Time Hypothesis states that k-SAT problems cannot be solved in SUBEXP time in the worst case. If the Exponential Time Hypothesis were true, then it would have the implication of P not equalling NP. The hypothesis can further be used to state that many problems have equivalent complexities, and if one is SUBEXP, then they all are. SUBEXP expresses that the running time of some algorithm may grow faster than a polynomial, but not faster than an exponential (EXP).
For this reason, SUBEXP is a subset of EXP as every problem that can be completed in SUBEXP time can also be done in EXP time.