CS 580 Homework 11

November 15 before class, 2023

1. Given the below scenarios regarding a problem A, fill in the table according-ing to which classes A belongs. Use "Y" if it belongs to a given class, "N" if it does not, and "U" if there's not enough information to decide. You do not need to justify your answers.

	$A \in \mathcal{P}$?	$A \in \mathcal{NP}$?	Is A $\mathcal{NP}$-hard	Is A $\mathcal{NP}$-complete?
a. $A \propto B$ and $B \in \text{DTIME}(n^3)$				
b. $B \propto A$ and $B \in \text{NTIME}(n^3)$				
c. $A \propto B$ and B has polynomial-time verification				
d. B is $\mathcal{NP}$-complete and $A \propto B$				
e. SAT $\propto B$ and $B \propto A$				
f. $B \propto$ SAT and $A \propto B$				