The Theory of Computation
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Solution Manual
Chapter 7, Additional Problem 33

Using the hint, we know of at least one such class: PSPACE. Thus we let A be a PSPACE-complete set, such as *QSAT*. Now P^A is the set of all problems decidable in polynomial time with the help of an oracle for PSPACE, so that we certainly have $\mathrm{PSPACE} \subseteq \mathrm{P}^A$, and NP^A is the set of all problems solvable nondeterministically in polynomial time with the help of an oracle for PSPACE, which is surely contained within NPSPACE, the set of all problems solvable nondeterministically in polynomial space. Finally, we clearly have $\mathrm{P}^A \subseteq \mathrm{NP}^A$ and we know from Savitch's theorem that NPSPACE equals PSPACE. Combining all these relations, we can write

$$\mathrm{PSPACE} \subseteq \mathrm{P}^A \subseteq \mathrm{NP}^A \subseteq \mathrm{NPSPACE} = \mathrm{PSPACE}$$

so that all of these sets are in fact equal.