

Karp reduction

When you show that a problem π reduces to π' , then you learn that π is no harder than π' .

Therefore, knowing that π' can be solved in polynomial time really tells you something - that π can be solved in polynomial time.

However, if $\pi \in \mathcal{P}$ and $\pi \propto \pi'$, you don't learn anything about π' . It could be that π' is solvable in polynomial time, or maybe not!