Quantum Algorithms: Quiz 1 2021-02-04

Name: _____

1. What does it mean for a predicate P on domain X to be *decidable*?

Solution: A predicate is a function $P : X \to \{0, 1\}$. The predicate P is decidable if this function is computable, meaning that there is an encoding of X using symbols from A and a Turing machine $\mathcal{M}$ such that for all $x \in X$ we have

$$\mathcal{M}(e(x)) = P(x),$$

where $e(x) \in A^*$ is the encoding of x in the characters of A.