

CS 4390/5353
Quantum Computing
Home Assignment 1
Due August 31, 2004

1. Compute the probability of 0 and 1 for the following state:

$$\frac{1}{\sqrt{3}}|0\rangle + \frac{\sqrt{2} \cdot i}{\sqrt{3}}|1\rangle.$$

Check that it is a physically valid state.

2. Describe the disjunction operation \vee as a Toffoli gate; write down the truth table for this gate.