1. finer discretization represents the state space accurately,

also increases the size of Q-table

i) 5bins per dimension → 5^4
ii) 50 bins per dimensi → 50^4

But only 1k episodes, the agent would fail to generalize due to insufficient experience so finer discretization though gives better representation of reality, large amount of data would be required to give valid information.

2. With 10k, agent gets more experience and with fine discretization, it learns and out performs coarse one. Finer discretization if provided more data could give better performance.

3. Problems caused by discretization are

1. Same states might fall into different pins.
2. Q-table becomes large.
3. No learning transfer b/w nearby states

4. 5000 bins would definitely give better results but impossible.

5000 bins per dimension → 625×10^{16} states
&
impossible to store and explore.