Figure 4.15 Two examples of transitions in local-sensing vacuum worlds. (a) In the deterministic world, \textit{Right} is applied in the initial belief state, resulting in a new predicted belief state with two possible physical states; for those states, the possible percepts are \([R, \text{Dirty}]\) and \([R, \text{Clean}]\), leading to two belief states, each of which is a singleton. (b) In the slippery world, \textit{Right} is applied in the initial belief state, giving a new belief state with four physical states; for those states, the possible percepts are \([R, \text{Dirty}], [L, \text{Dirty}], \) and \([R, \text{Clean}]\), leading to three belief states as shown.

Figure 4.16 The first level of the \textit{AND–OR} search tree for a problem in the local-sensing vacuum world; \textit{Suck} is the first action in the solution.