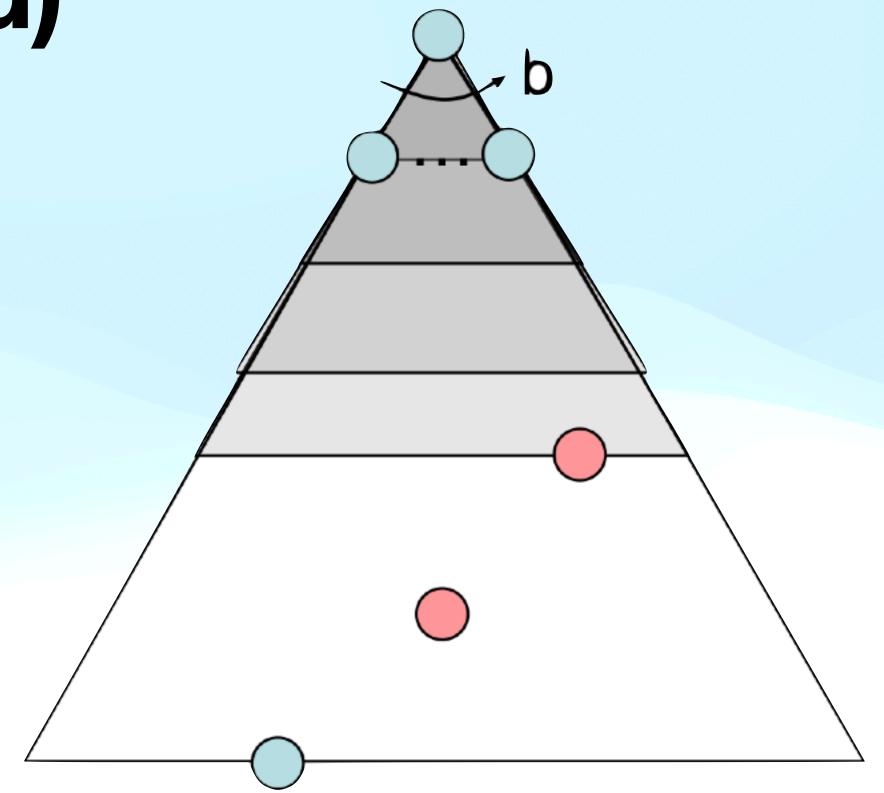# BFS algorithm
Important aspect

- The order of the nodes in fringe **FIFO**

- Should the same state be generated?

  - Same as the EXPANDED states **NO (reached)**

  - Same as the states IN fringe **NO (reached)**

- When to report the goal?

  - When generated? **Yes**

  - When expanded?

BFS algorithm (cont'd)

- Time Complexity: $\tilde{\mathcal{O}}(b^s)$

$$\sum_{i=1}^{s} b^i = \tilde{\mathcal{O}}(b^s)$$

- Space Complexity: $\tilde{\mathcal{O}}(b^s)$

- Complete

- Optimal: if the step cost is constant

1 node

b nodes

b^2 nodes

b^s nodes

b^m nodes