Think3.1: Graph for Water jug:

(0,0)

(4,0) (0,3)

(1,3) (3,0)

(1,0) (4,3) (3,3)

(0,1) (4,2)

(4,1) (0,2)

(2,3) (2,0)

* The purple oval is the initial state.
* Two red ovals are goals.
* The yellow oval is the dead-end state.
* Yellow path and green path are two paths that we can directly reach from the initial state to the goal steps.