3.1 the algorithm guaranteed to be optimal in $0 \le w \le 1$.
because scaling $g(n)$ by a constant has no effect on
the relative ordering of the chosen paths.

$W=0$ $f(n)=2g(n)$ Uninformed best-first search

$W=1$ $f(n)=g(n)+h(n)$ A^* search

$W=2$ $f(n)=2h(n)$ Greedy best-first search

3.2 ① Since the state space consists of all the x,y
positions, there are numerous points, so there are
infinite number of states.

② We all know that the shortest distance between two points
is the straight line. So the shortest distance between two
points under obstacles is to go straight line around
obstacles as close as possible.
a good state is points along polygons and start, goal points.
All moves are start and end at some of these points