3.8 (a)

Answer: because if there is arbitrary negative path costs, any algorithm is unable to cut off branches or exclude states, because any uncounted or unvisited negative path probably can contribute to cost reduction of route, therefore can be a part of the best route.

39 (a)

Initial state – three missionaries and three cannibals on one bank of a river along with a boat

Actions – ship one or two of the missionaries and cannibals from one to the other side of the river

Transition model – returns the resulting state as per the given state and actions

Goal test – checks whether all the missionaries and cannibals are on the other bank of the river.

Path cost – the cost is the number of shipments where each shipment is of cost 1

39 (b) Implement and solve the problem optimally using an appropriate search algorithm. Is it

a good idea to check for repeated states?

3.13

3.21

Create a small example of your own and follow the A\* algorithm on non-admissible heuristic to see what the output is. Is the output optimal?

Note question 3.9 is in fact a programming question, although the original question asks you to implement a solution using one algorithm, you should try at 3 different search algorithms and compare their performance. In your submission, you should report the algorithms implemented and show the performance comparison.