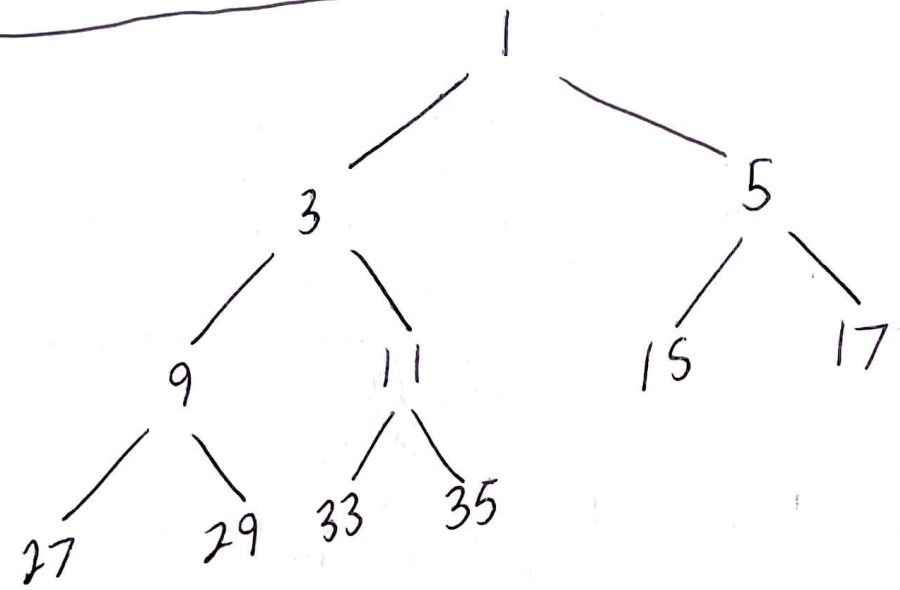
CS 4365 Assignment 1

0.1 Uninformed Search

a)



b) BFS: 1, 3, 5, 7, 9, 11, 15, 17, 27, 29, 33, 35

c) DFS: 1, 3, 9, 27, 29, 11, 33, 35

d) IDS: 0 depth limit: 1

1 depth limit: 1, 3, 5

2 depth limit: 1, 3, 9, 11, 5, 15, 17

3 depth limit: 1, 3, 9, 27, 29, 11, 33, 35

e) Yes because we can generate predecessors from X easily. X's predecessors would be the floor of $X/3$ or $\lfloor \frac{X}{3} \rfloor$. If we use bidirectional search for this problem we would have an intersection at node 11 using a BFS from the start state 1 and goal state 35.

0.2 Informed Search

a)

expanded state	g-values	Successor states
oradea	0	Zerind(71), Sibiu(151)
Zerind	71	Arad(146) Sibiu(151)
Arad	146	Sibiu(151), Timisoara(264), ~~Sibiu(286)~~
Sibiu	151	Fagaras(250), Rimnicu Vilcea(231), Timisoara(264)
Rimnicu Vilcea	231	Craiova(377), Pitesti(328), Fagaras(250), Timisoara(264)
[illegible]		[illegible]
Fagaras	250	bucharest(461),
Timisoara	264	Lugoj(354)
pitesti	328	craiova(466), bucharest(429)
bucharest	429	∅

b)

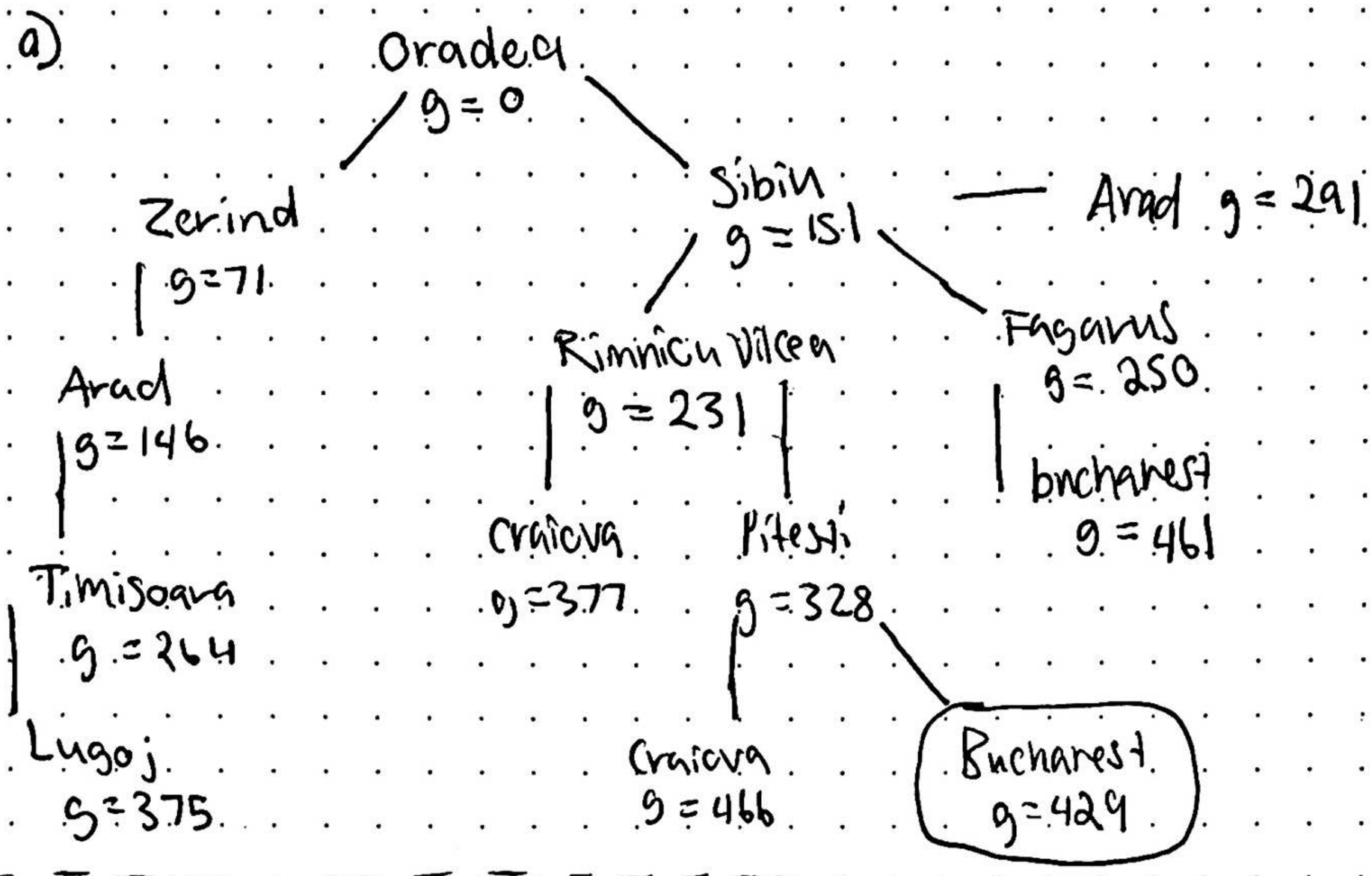
expanded state	h(s)-values	Successor states
oradea	380	Zerind(374), Sibiu(253)
Sibiu	253	[illegible], Fagaras(176), Rimnicu Vilcea(193), Arad(366)
Fagaras	176	[illegible], bucharest(0)
bucharest	0	∅

c)

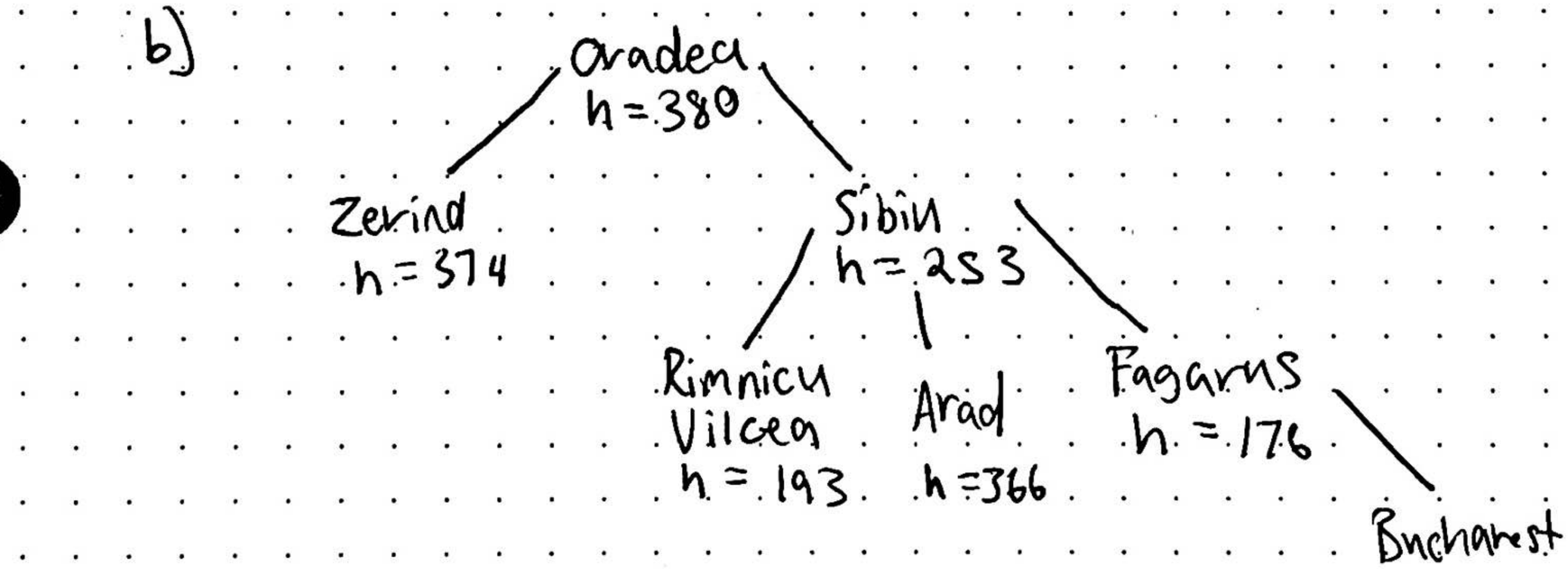
expanded states	(f, g, h) values	Successor states
oradea	(0, 380, 380)	Zerind(495), Sibiu(404)
Sibiu	(151, 253, 404)	[illegible], [illegible], Fagaras(426), Rimnicu Vilcea(424), Arad(657)
[illegible]	[illegible]	[illegible]
Rimnicu Vilcea	(231, 145, 424)	[illegible], Craiova(537), Pitesti(428)
Pitesti	(328, 100, 428)	[illegible], [illegible], bucharest(429)
bucharest	(429, 0, 429)	∅

0.2 Informed Search

a)



b)



c)