# 1

Distance matrix:

| | a | b | c | d | e | f | g | h | i | j | k | l | m |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| a | | | | | | | | | | | | | |
| b | 0 | | | | | | | | | | | | |
| c | 0 | 0 | | | | | | | | | | | |
| d | 0 | 0 | 0 | | | | | | | | | | |
| e | 0 | 0 | 0 | 0 | | | | | | | | | |
| f | 2 | 2 | 2 | 2 | 2 | | | | | | | | |
| g | 2 | 1 | 1 | 2 | 2 | 0 | | | | | | | |
| h | 1 | 1 | 3 | 4 | 4 | 2 | 2 | | | | | | |
| i | 4 | 3 | 1 | 2 | 4 | 2 | 2 | 0 | | | | | |
| j | 4 | 4 | 4 | 2 | 0 | 2 | 2 | 0 | 0 | | | | |
| k | 2 | 0 | 2 | 5 | 7 | 8 | 1 | 1 | 3 | 6 | | | |
| l | 5 | 3 | 1 | 2 | 4 | 6 | 2 | 4 | 0 | 4 | 3 | | |
| m | 9 | 7 | 5 | 2 | 0 | 2 | 6 | 6 | 4 | 0 | 0 | 3 | |

| density | a | b | c | d | e | f | g | h | i | j | k |
|---|---|---|---|---|---|---|---|---|---|---|---|
| value | 8 | 8 | 9 | 10 | 8 | 10 | 11 | 7 | 7 | 7 | 6 |

# 2

Path from b to j is not density reachable. This is because the only nodes density reachable from b is a and c. We can see this by trying to reach any nodes within eps from b, and recursively doing the same from the set of reached nodes. This will get us from b directly to a and c, but not any further, since

neither a or c have any density reachable nodes except for b itself. Since j is not a part of neither of these, there is no density reachable path from b to j.

# 3

Density reachability is a symmetrical relationship, because if a node a is reachable from b, then b is also reachable from a. This is because the exact same path can be taken in reverse, since the eps value is still the same.