Exercise 4.1

(a)

Reflexive: **Dissimilarity function**

(b)

Reflexive, symmetric, strict: **Semi-metric**

(c)

Reflexive, symmetric, triangle inequality: **Pseudo-metric**

(d)

Reflexive: **Dissimilarity function**

(e)

Reflexive, symmetric, strict, Triangle inequality: **Metric**

Exercise 4.2

r = 1 and r = 3 are considered equivalent by this distance function.  
Not strict 🡪 Pseudo-metric

It can be sensible, as it might make sense in some databases to allow duplicates. This could show a repetitive occurrence in the data set, which would be ignored if duplicates were not allowed.

Exercise 4.3

Python script:

python C:\Users\nuko\4sem\ML\exercise\exercise4-3.py

Exercise 4.4