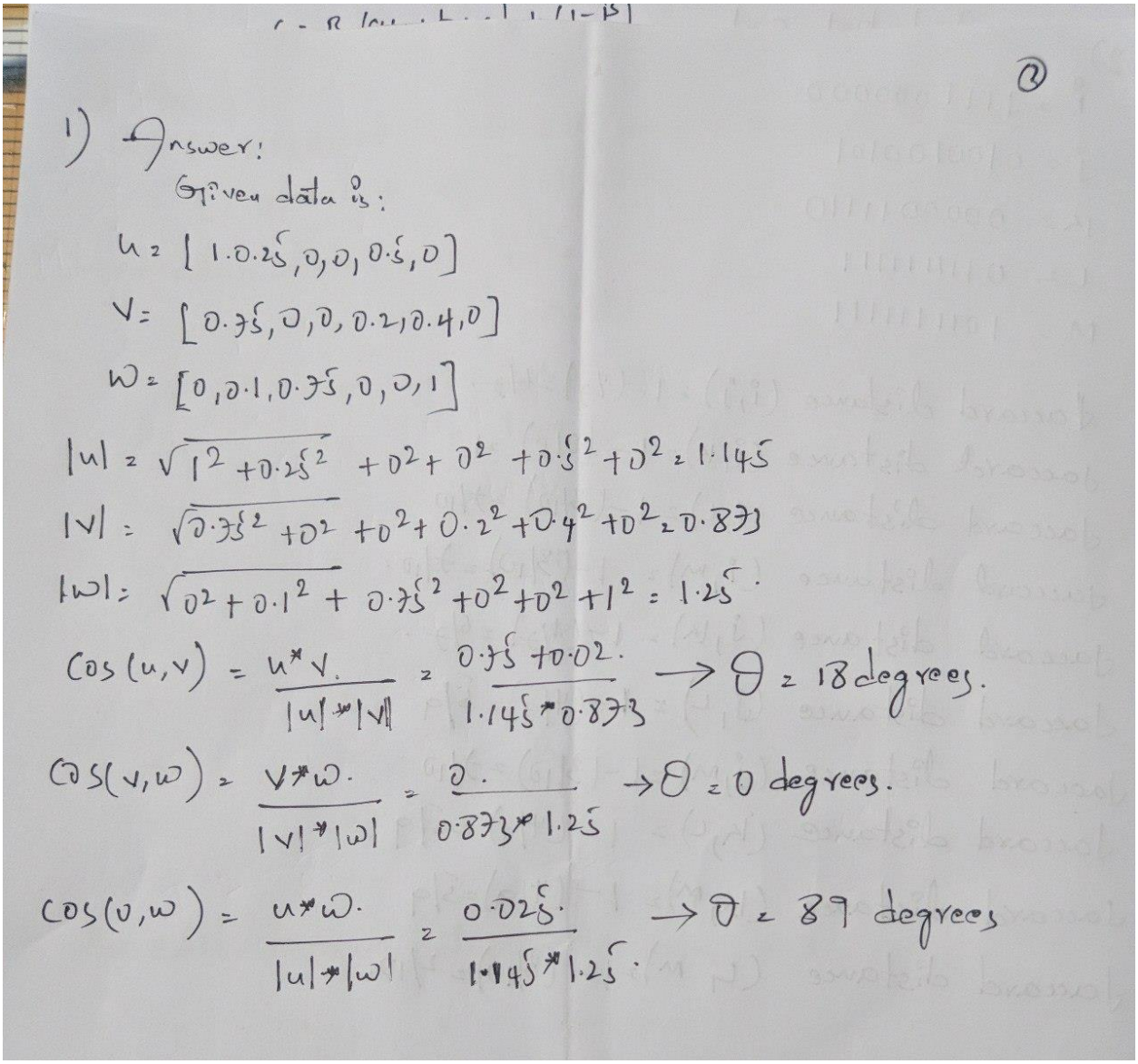
Distance Measures

Question 1:

Consider the following three vectors u, v, w in a 6-dimensional space:

u = [1, 0.25, 0, 0, 0.5, 0]
v = [0.75, 0, 0, 0.2, 0.4, 0]
w = [0, 0.1, 0.75, 0, 0, 1]

Suppose cos(x,y) denotes the similarity of vectors x and y under the cosine similarity measure. Compute all three pairwise similarities among u,v, w.

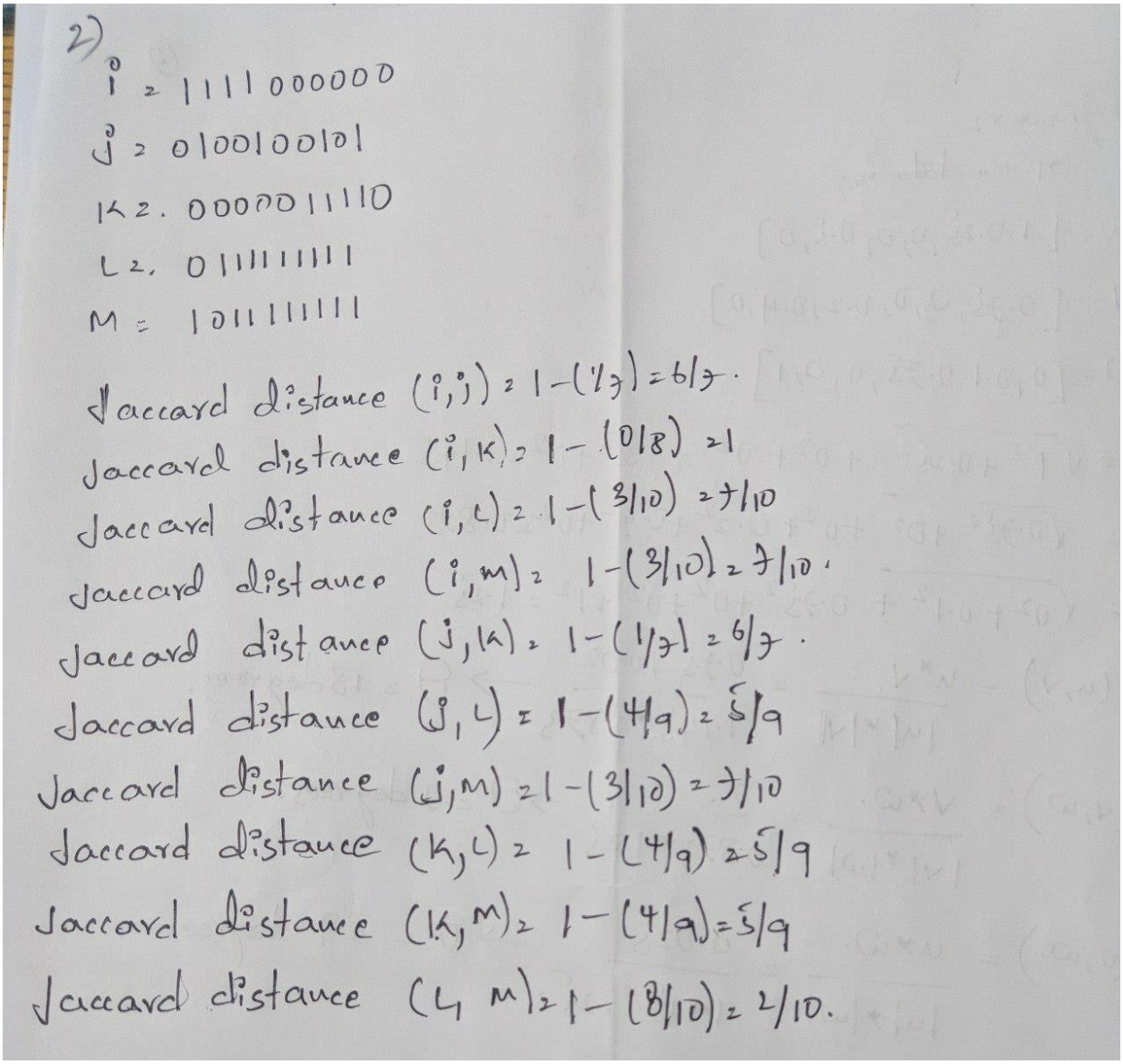


Question 2:

Here are five vectors in a 10-dimensional space:

1111000000 0100100101 0000011110 0111111111 1011111111

Compute the Jaccard distance (not Jaccard "measure") between each pair of the vectors.

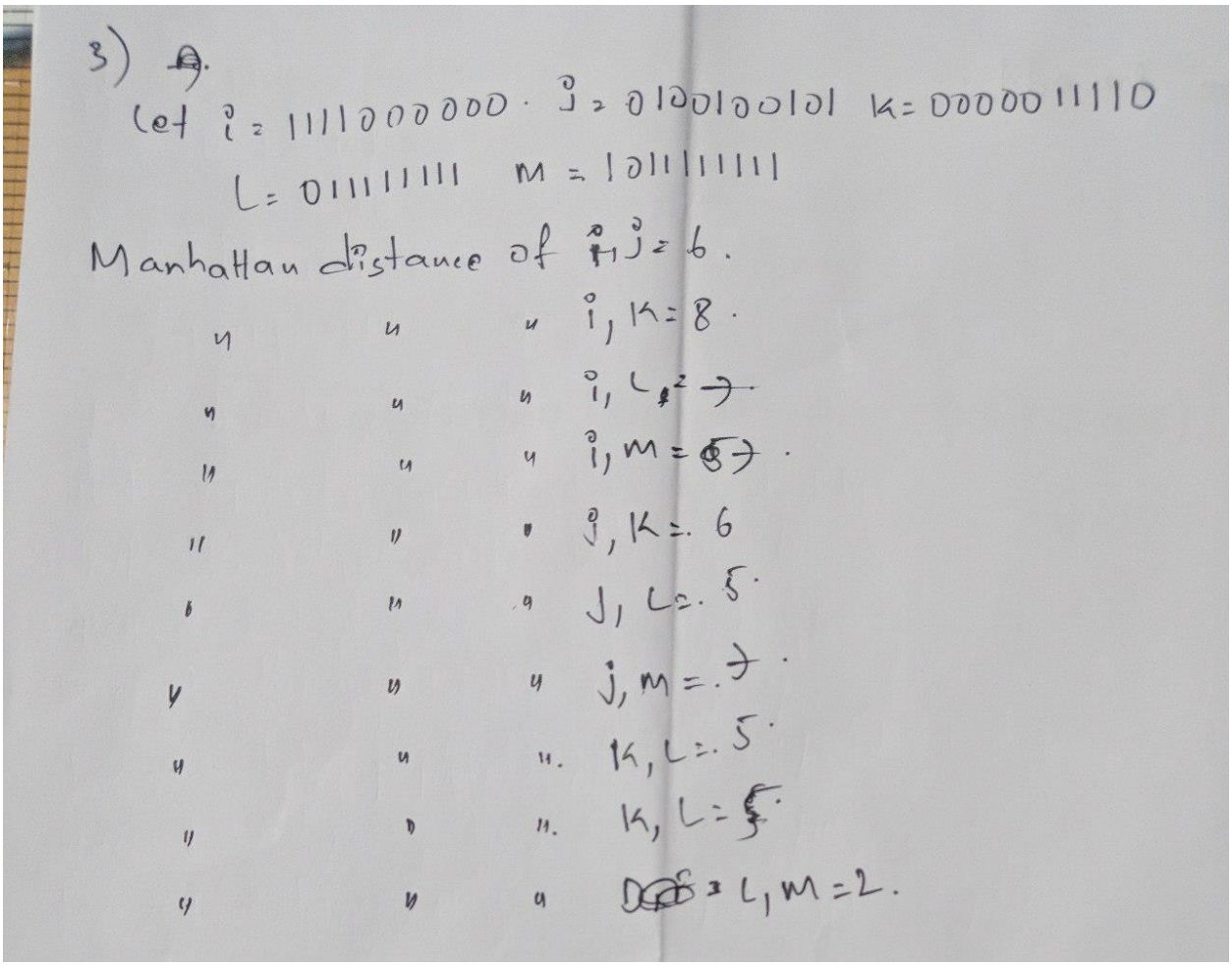


Question 3:

Here are five vectors in a 10-dimensional space:

1111000000 0100100101 0000011110 0111111111 1011111111

Compute the Manhattan distance (L_1 norm) between each two of these vectors.



Question 4: The edit distance is the minimum number of character insertions and character deletions required to turn one string into another. Compute the edit distance between each pair of the strings **`he`**, **`she`**, **`his`**, and **`hers`**.

4) The edit distance between. he and she = 1

" " " " he and his = 3

" " " " he and hers = 2.

" " " " she and his = 4

" " " " she and hers = 3.

" " " " his and hers = 3.