Mean Calculation:

The formula for the mean (average) of a set of values is:

Mean=Sum of all values/Number of values

Population Standard Deviation Calculation:

The formula for the population standard deviation of a set of values is:

Population Standard Deviation = sqrt(Sum of squared differences / (n))

Sepal length: [6.3, 5.1, 5.7, 5.0, 4.8, 6.6, 6.3, 6.3, 6.0, 4.7, 5.0, 6.1, 6.8, 4.5, 7.7]

Sepal width: [2.9, 3.4, 2.5, 3.5, 3.4, 2.9, 3.3, 3.4, 3.4, 3.2, 3.3, 2.9, 3.2, 2.3, 3.0]

Sepal length mean:

Sum of values = 6.3 + 5.1 + 5.7 + ... + 4.5 + 7.7 = 86.899

Mean(length) = Sum of values / Number of values = 86.0 / 15 = 5.793

Sepal width mean:

Sum of values = 2.9 + 3.4 + 2.5 + ... + 2.3 + 3.0 = 46.59

Mean(width) = Sum of values / Number of values = 48.6 / 15 = 3.106

Now, let's calculate the standard deviation:

Sepal length standard deviation:

Mean = 5.793

Sum of squared differences = (6.3 - 5.793)^2 + (5.1 - 5.793)^2 + ... + (7.7 - 5.793)^2 = 11.809

Standard Deviation(length) = sqrt(Sum of squared differences / (n)) = sqrt(11.809 / 15) ≈ 0.88729

Sepal width standard deviation:

Mean = 3.24

Sum of squared differences = $(2.9 - 3.24)^2 + (3.4 - 3.24)^2 + \ldots + (3.0 - 3.24)^2 = 1.749$

Standard Deviation(width) = sqrt(Sum of squared differences / (n) = sqrt(1.749 / 15) ≈ 0.34149

After Z-score normalization

New_value(length) = old_value(length) – mean(length)/std(length)
New_value(length) = old_value(length) – mean(length)/std(length)

	Sepal length	Sepal width	Class
0	0.571025	-0.605173	virginica
1	-0.781403	0.858956	setosa
2	-0.105189	-1.776477	virginica
3	-0.894105	1.151781	setosa
4	-1.119510	0.858956	setosa
5	0.909132	-0.605173	versicolor
6	0.571025	0.566130	versicolor
7	0.571025	0.858956	versicolor
8	0.232918	0.858956	versicolor
9	-1.232212	0.273304	???
10	-0.894105	0.566130	???

	Sepal length	Sepal width	Class
11	0.345621	-0.605173	???
12	1.134537	0.273304	???
13	-1.457617	-2.362128	???
14	2.148858	-0.312348	???

Pairwise distances

	0	1	2	3	4	5	6	7	8
0	2.006	0.739	2.339	0.941	0.596	2.315	1.827	1.896	1.578
1	1.876	0.314	2.472	0.586	0.370	2.150	1.465	1.494	1.164
2	0.225	1.848	1.255	2.150	2.071	0.564	1.193	1.481	1.468
3	1.044	2.003	2.396	2.211	2.329	0.907	0.635	0.813	1.075
4	2.684	3.291	1.474	3.559	3.239	2.948	3.562	3.807	3.638
5	1.605	3.156	2.688	3.377	3.472	1.274	1.806	1.965	2.246

Top 3 KNN distances for

	Sepal length	Sepal width	Class
9	-1.232212	0.273304	???
10	-0.894105	0.566130	???
11	0.345621	-0.605173	???
12	1.134537	0.273304	???
13	-1.457617	-2.362128	???
14	2.148858	-0.312348	???

are

	0	1	2	CLASS
0	(0.596, setosa)	(0.739, setosa)	(0.941, setosa)	setosa
1	(0.314, setosa)	(0.37, setosa)	(0.586, setosa)	setosa
2	(0.225, virginica)	(0.564, versicolor)	(1.193, versicolor)	versicolor
3	(0.635, versicolor)	(0.813, versicolor)	(0.907, versicolor)	versicolor
4	(1.474, virginica)	(2.684, virginica)	(2.948, versicolor)	virginica
5	(1.274, versicolor)	(1.605, virginica)	(1.806, versicolor)	versicolor

After taking majority votes,
The final classes are indicated above in column CLASS.
['setosa', 'setosa', 'versicolor', 'versicolor', 'virginica', 'versicolor']