a.

Of course, training is great if you only use a K of 1. Because if you trained on the training, and then are looking for x = 2, y = 3, you will find exactly x = 2, and y = 3. And it will be the perfect classification. Test is pretty decent at k = 2 and validation is best around k = 6 or 7. Test doesn’t appear to need as many nodes to compare to, but validation needs more information in order to classify the new data. Training just gets worse and worse over time, because it does best when it just picks the exact correct node to compare, and gets less accurate with more data.

b+c.

The training is best when unpruned, because the tree is perfectly fit for the training data. Most of the data from this set does best right around a confidence factor of 0.15 and then Stay about the same from there on. So the easy choice is just to use a confidence factor of .15 for this data set.