A.

SVM tries to find a line with the biggest margin between it and the separated groups. Kernels map the default linear function to different forms such as polynomial which maps to higher dimensions and radial which uses a circular boundary. Kernels are used when the data is not easily linearly separated.

My impression of the strengths are that SVM can be used in many different situations by using different kernels and hyper parameters. Being able to use them for both classification and regression as well as data that has low observations and high dimensions makes them useful in almost any situation.

My impression of the weaknesses are that SVM can be time consuming or infeasible on large datasets which might require compromising by taking smaller samples. Finding the best kernel or hyper parameter for the job has some trial and error to it which is unsatisfying and tends to settle on ones that work good enough.

B.

Decision trees are a greedy algorithm that split the observations over and over until the observations in the area are uniform. Random forest is an ensemble technique which uses many decision trees on subsets of the data and votes on which one did the best. Xgboost is similar to random forest but it requires preprocessing the data. It runs extremely fast allowing for many iterations. Adaboost is also tree based and iteratively trains learners then adjusts weights based on error then repeats.

My impression is that ensemble methods can reduce bias and variance as well as perform better than the individual algorithm that they are based off of. The tradeoff is that they are more resource intensive, more complex, and harder to interpret.