

ASSIGNMENT 3

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a) Perform Random Forest Regression on this data and fill in the following table

Number of Trees	R squared values
10	0.7777
50	0.9808
100	0.9878
200	0.9902
300	0.9858
400	0.9811
500	0.9918

b) When we increased the number of trees from 10 to 200, the R^2 value increased significantly, meaning the model became more accurate. However, after 200 trees, the R^2 values started to decrease. More trees help the Random Forest model capture patterns better by reducing variance and leading to better predictions but after a certain point (around 200 trees here), adding more trees does not add much new information. Thus, the model is already accurate, and more trees just add computational cost without much accuracy gain. Small ups and downs after many trees are normal because randomness in tree construction can lead to tiny differences but overall, the model remains very strong.