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1. I used MNIST data and eliminate the examples that their labels isn’t equal to 3 or 8. So in total there are 9943 training points and 2039 test points with label 3 or 8. By 100 training points we will give accuracy more than 90 percent for all kernels and by giving all training points we will give 96.8 % for leaner kernel and 98.03 percent accuracy for polynomial kernel with degree 3.

2. In general by increasing C the accuracy will be increased. Below you can see role of C to the accuracy. We calculate Log10(C) and the x-axis is Log10(C) and y-axis is accuracy. We also tried 4 kernels (one linear and 3 polynomial kernel)

0.00001<C< 10000000

3. For finding support vectors we used this code:

plt.imshow(clf.support\_vectors\_[10\*i].reshape((28, 28)), cmap = cm.Greys\_r)

plt.show()





