1. Ordinary Least Squares

	coefficients
sulphates	0.785263
alcohol	0.274889
fixed acidity	0.034278
residual sugar	0.013390
free sulfur dioxide	0.003390
total sulfur dioxide	-0.002942
citric acid	-0.078513
pH	-0.266066
volatile acidity	-1.030240
chlorides	-2.006122
density	-26.749057

2. Ridge Regression

	coefficients
sulphates	0.723693
alcohol	0.302385
fixed acidity	0.010857
free sulfur dioxide	0.003524
residual sugar	0.001946
total sulfur dioxide	-0.002941
density	-0.084080
citric acid	-0.088122
pH	-0.377967
volatile acidity	-1.056857
chlorides	-1.842617

3. Lasso Regression

	coefficients
sulphates	0.650404
alcohol	0.303289
fixed acidity	0.012592
free sulfur dioxide	0.003551
residual sugar	-0.000000
density	-0.000000
total sulfur dioxide	-0.002911
citric acid	-0.006756
pH	-0.264527
volatile acidity	-1.024902
chlorides	-1.461199

4. Elastic Net Regression

	coefficients
sulphates	0.650404
alcohol	0.303289
fixed acidity	0.012592
free sulfur dioxide	0.003551
residual sugar	-0.000000
density	-0.000000
total sulfur dioxide	-0.002911
citric acid	-0.006756
pH	-0.264527
volatile acidity	-1.024902
chlorides	-1.461199

Comparing models on test data

	quality	OLS predictions	Ridge predictions	Lasso predictions	Elastic predictions
1309	5	5.159327	5.153725	5.135888	5.135888
830	4	5.621985	5.633305	5.623935	5.623935
1437	5	5.318050	5.289199	5.323034	5.323034
450	6	5.933765	5.955189	5.973129	5.973129
797	7	6.206667	6.158501	6.132742	6.132742
...	...	...	...	...	...
938	7	6.617217	6.616747	6.611638	6.611638
785	5	5.408043	5.409767	5.416461	5.416461
1296	5	5.165905	5.159852	5.140238	5.140238
1127	6	5.668314	5.638384	5.641488	5.641488
109	5	4.753760	4.746517	4.777687	4.777687

- Ordinary Least Squares mean squared error: 0.4135099191031876
- Ridge Regression mean squared error: 0.4131686643198772
- LASSO Regression mean squared error: 0.41569520944807525
- Elastic Net Regression mean squared error 0.41569520944807525

Ridge Regression: alpha tuning parameter vs. CV Mean Squared Error

Lasso Regression: Alphas vs. 5-Fold Cross Validation MSE