STAT 500: HW9

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1. Using the `seatpos` data, perform a PCR analysis with `hipcenter` as the response and `HtShoes`, `Ht`, `Seated`, `Arm`, `Thigh` and `Leg` as predictors. Select an appropriate number of components and give an interpretation to those you choose. Add `Age` and `Weight` as predictors and repeat the analysis. Use both models to predict the response for predictors taking these values:

Age	Weight	HtShoes	Ht	Seated	Arm	Thigh	Leg
64.800	263.700	181.080	178.560	91.440	35.640	40.950	38.790

2. Take the `fat` data, and use the percentage of body fat, `siri`, as the response and the other variables, except `brozek` and `density` as potential predictors. Remove every tenth observation from the data for use as a test sample. Use the remaining data as a training sample building the following models:

(a) Linear regression with all predictors
(b) Linear regression with variables selected using AIC
(c) Principal component regression
(d) Ridge Regression
(e) Lasso