library(glmnet)

## Predictor and response generation

n <- 50

#p <- 10

p <- 60

X <- matrix(rnorm(n\*p),n,p)

#beta <- c(0,0,-2,0,3,3,0,0,0,0)

beta <- c(rnorm(p/4,3,0.1),rnorm(p/4,1,0.1),rnorm(p/4,-1.5,0.1),rep(0,p/4))

y <- rnorm(n,X%\*%beta,0.5)

##### LASSO #####

m.lassoglm <- cv.glmnet(X,y)

m.lassoglm1 <- glmnet(X,y,lambda=m.lassoglm$lambda.min)

par(mar=c(6,6,1,1))

plot(beta,col="red", pch=19,xlab="predictor index",

ylab="coefficients",cex.axis=1.5,cex.lab=2)

lines(m.lassoglm1$bet,type="h")

# Prediction at observed data

y.pred.lasso1 <- predict(m.lassoglm,newx=X)

mean((y.pred.lasso1 - y)^2)/var(y)