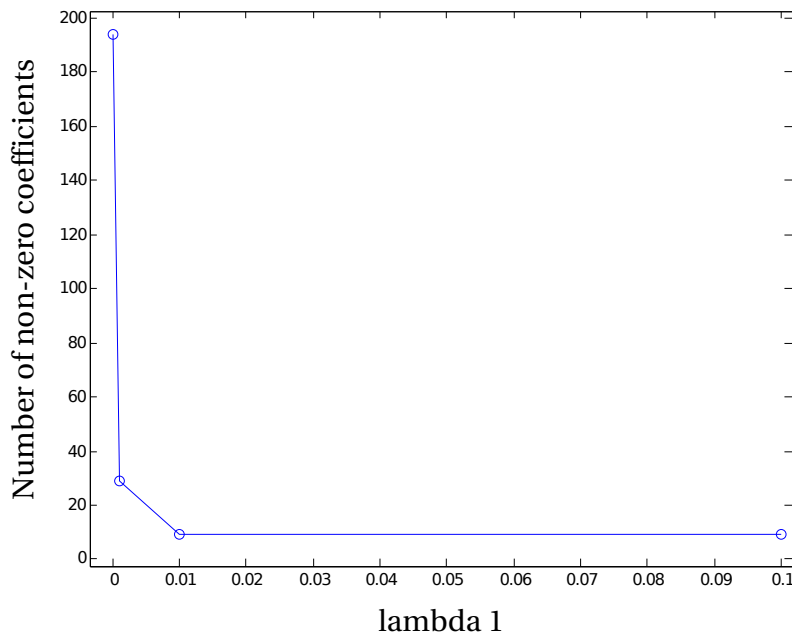**(4.4)** Below we plot the number of non-zero coefficients against the lambda value.



**(4.5)** The objective function values are

**lambda : objective function value**
        0.1 : 2.2534
       0.01 : 0.4359
      0.001 : 0.0447
     0.0001 : 0.0051

**(4.6)** When lambda = 0.001, there are 5 groups with non-zero coefficents. Some of the other groups have zero coefficients, but these ones have full "group sparsity". However, when lambda is a smaller value, many more groups have non-zero coefficients (just about all of them when lambda = 0.0001). On the other hand, only 9 coefficients total have non-zero values when lambda is raised to 0.01 and 0.1. Hence, as the values of lambda are increased there seems to be far more group sparsity.