

3.

a)

Number of knots with lowest MSE of 21.05 = 7 knots

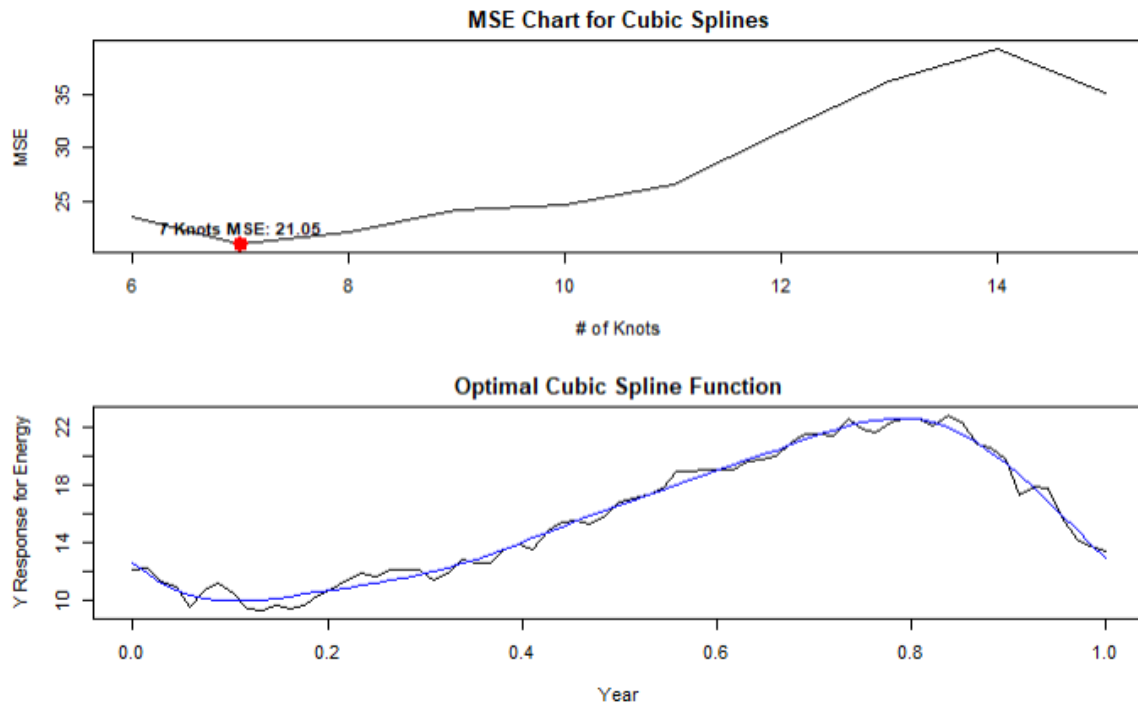


Figure 1: Cubic Spline MSE & Optimal Function Plots

b)

Number of knots with lowest MSE of 20.11 = 11 knots

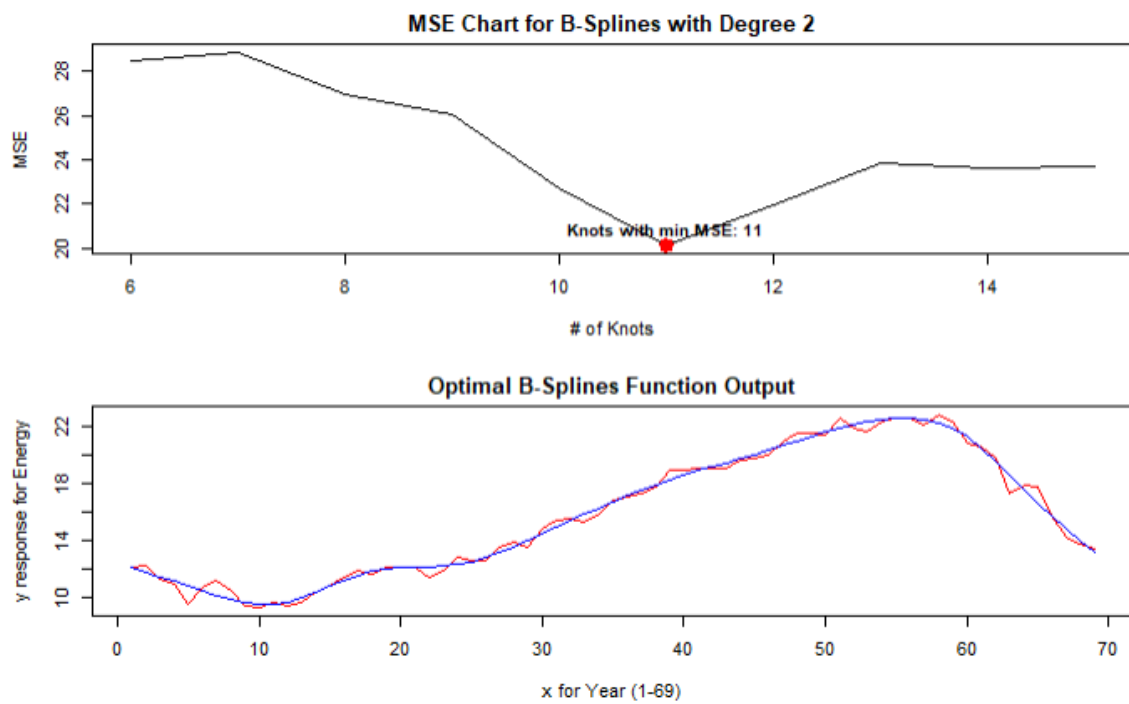


Figure 2: B-Splines MSE & Optimal Function Plots

c)

The smoothing splines with an MSE = 24.29586 with an optimal lambda = 0.4994995

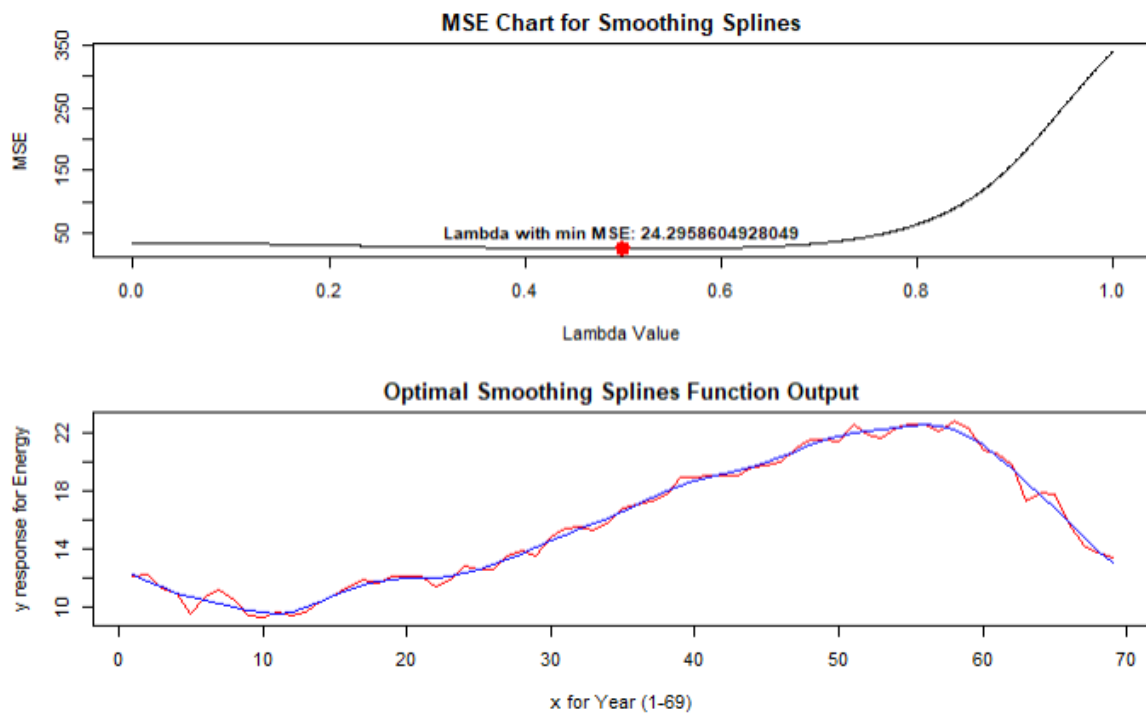


Figure 3: Optimal MSE & Lambda For Smoothing Splines

d)

Lambda value of 0.03 produces a MSE of 15.23 for Gaussian Kernel Smoother

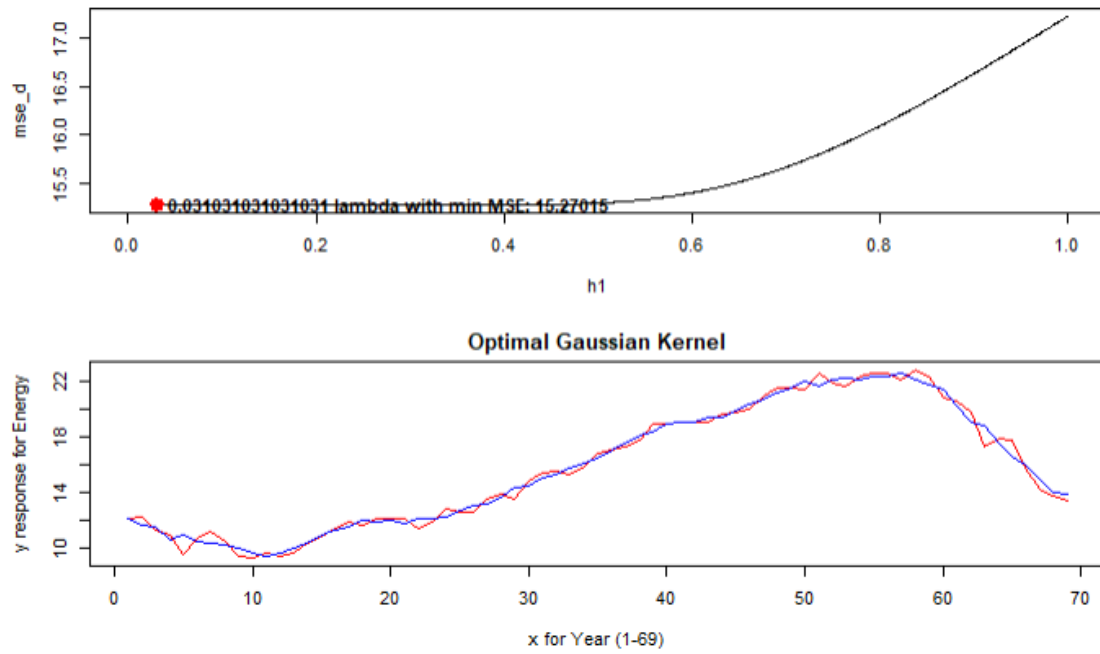


Figure 4: Optimal MSE & Lambda For Gaussian Kernel