Tutorial 9

Machine Learning and Big Data for Economics and Finance

This week's tutorial will only consist of practical activities using `R`.

List of activities

I. Finish last week's activities from the textbook **Section 10.4 Lab 1: Principal Components Analysis**.

II. Complete the activity from the textbook **Section 10.5 Lab 2: Clustering**.

III. Exercise:

Consider the function

$$f(x) = \beta_0 + \beta_1 x + \beta_2 (x - \xi)_+^3$$

1. Show that there exists two polynomials f_1 and f_2 such that
   - $f(x) = f_1(x)$ if $x > \xi$.
   - $f(x) = f_2(x)$ if $x < \xi$.
   - $f_1(\xi) = f_2(\xi)$.
   - $f_1'(\xi) = f_2'(\xi)$.
   - $f_1''(\xi) = f_2''(\xi)$.
2. Is f'' differentiable?