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Problem Set 8
Advanced Macroeconomics
Winter 2025/26

Linearization

1. Compare the lecture code files ramseygrowthext_temp.mod and ramseygrowthext_stoch.mod.

   (a) How do the units of the variables differ? Calculate the consumption in steady state in both codes using the same calibration and compare the values.

   (b) Why do we use variables in logs instead of levels?

2. The Taylor approximation is used to linearize non-linear equations. Assume as a simple example a function
$$y = \ln(1 + x),$$
   where the Taylor approximation of order one around $x_0 = 0$ gives the linear function

$$y_1 = x,$$

   and the approximation of order two around $x_0 = 0$ gives the quadratic function

$$y_2 = x - \frac{x^2}{2}.$$

   Plot all three functions and explain what you observe.