Full-employment Effects of Government Debt

Assume:

\[ Y = K^{1/3}L^{2/3}. \]

Savings out of disposable income, \( s = 0.08 \).
Labor force growth, \( n = 0.03 \).
Depreciation, \( \mu = 0 \).

Calculate:

1. \( k^* \), the golden rule capital-labor ratio,
2. \( \bar{k} \), the maximum sustainable capital-labor ratio,
3. \( k^0 \), the steady-state capital labor ratio when \( \Delta = 0 \),
4. \( \Delta_{\text{max}} \), the maximum sustainable debt per head, and
5. \( \Delta_{\text{min}} \), the maximum sustainable surplus per head.

Plot:

1. steady-state \( k \) on the vertical axis versus steady-state debt, \( \Delta \), on the horizontal axis, and
2. steady-state consumption, \( c \), on the vertical axis versus steady-state debt \( \Delta \) on the horizontal axis.

[Plotting hint: \( k \) is not in general a single-valued function of \( \Delta \); \( c \) is not in general a single-valued function of \( \Delta \).]