Econometrics II, Mathematics background
i.c. from Binmore and Davies Ch. 13/14 for
Heij et al. Chapter 7.1/7.2/7.3/7.5/7.6

For Linear Time Series Models in Chapter 7

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Refresher/Background for understanding lag polynomials, stability conditions and (solutions to) linear difference equations in Ch. 7 of Heij is given Ch. 13, Ch. 14 of B&D.


**Polynomial algebra (and complex numbers)**

Stability/stationarity single/multiple equations

Study Example 17 of B&D §14.7 (and Example 21 §14.9)
Study in B&D §14.8 the figures on first half of page 446.

Study Example 21 (p. 451-452) in §14.9 (in connection with Example 17, §14.7). Note the condition for stability of the bivariate system of $C_t, I_t$ in Ex. 21 of B&D is similar to the stationarity condition for the bivariate VAR(1) for $x_t, y_t$ in H et al., §7.6.1. The stability analysis of the implied difference equation for $Y_t$ (or $C_t$) in Ex. 17, B&D corresponds to stationarity analysis for the implied ARMA(2,1) processes $x_t$ and $y_t$ in H et al., §7.6.1.

Study §14.12 in B&D, in particular the table on page 459. For a random walk with drift (Heij et al. §7.3) one has:
$\Delta y_t = \alpha + \varepsilon_t$ with solution to $\Delta y_t = \alpha$: $y_t = c + \alpha t$.
In notation of B&D: $\Delta y_x = b$ with solution $y = c + bx$. 