

### Exercise 3.1 (Coefficient matching)

For each of the following models, answer the questions below.

1.  $y_t = 0.3y_{t-1} + w_t - 0.8w_{t-1} + 0.15w_{t-2}$

2.  $y_t = -\frac{5}{6}y_{t-1} - \frac{1}{6}y_{t-2} + w_t - \frac{1}{2}w_{t-1}$ .

- (a) Is this model causal? Is it invertible? Is there any parameter redundancy?
- (b) Write this model in MA( $\infty$ ) form,  $y_t = \psi(B)w_t$ .
- (c) Write this model in AR( $\infty$ ) form,  $\Pi(B)y_t = w_t$ .
- (d) Check your work using the R functions `ARMAtoMA` and `ARMAtoAR`.