

# Homework 3

## Selected answers

March 24, 2022

### Problem 1

$$y_t = 0.3 + 0.5y_{t-1} - 0.4\varepsilon_{t-1} + \varepsilon_t$$

$$\mu = 0.3, \phi_1 = 0.5, \theta_1 = -0.4$$

$$\bar{y} = \frac{\mu}{1-\phi_1} = \frac{0.3}{1-0.5} = 0.6$$

### Problem 2

$$y_t = 0.1 + 0.4u_{t-1} + 0.2u_{t-2} - 0.1u_{t-3} + u_t; \hat{u}_{t-1} = 0.3, \hat{u}_{t-2} = -0.6, \hat{u}_{t-3} = -0.3$$

$$\mathbf{E}[y_{t+3}] = 0.1 - 0.1 \times \hat{u}_{t-1} = 0.1 + 0.1 \times 0.3 = 0.07$$

$$\mathbf{E}[y_{t+4}] = 0.1$$