



AR(1) Solution Summary

Model: $X_t = 2 + 0.7X_{t-1} + \varepsilon_t$
 $\varepsilon_t \sim \text{WN}(0, 9)$

Results:

- Mean:
 $\mu = c/(1-\phi) = 2/(1-0.7) = 6.6667$
- Variance:
 $\gamma(0) = \sigma^2/(1-\phi^2) = 9/0.5100$
 $= 17.6471$
- Autocovariance:
 $\gamma(1) = \phi \times \gamma(0) = 0.7 \times 17.65$
 $= 12.3529$
 $\gamma(2) = \phi^2 \times \gamma(0) = 0.48999999999999994 \times 17.65$
 $= 8.6471$
- Autocorrelation:
 $\rho(1) = \phi = 0.7$
 $\rho(2) = \phi^2 = 0.48999999999999994$