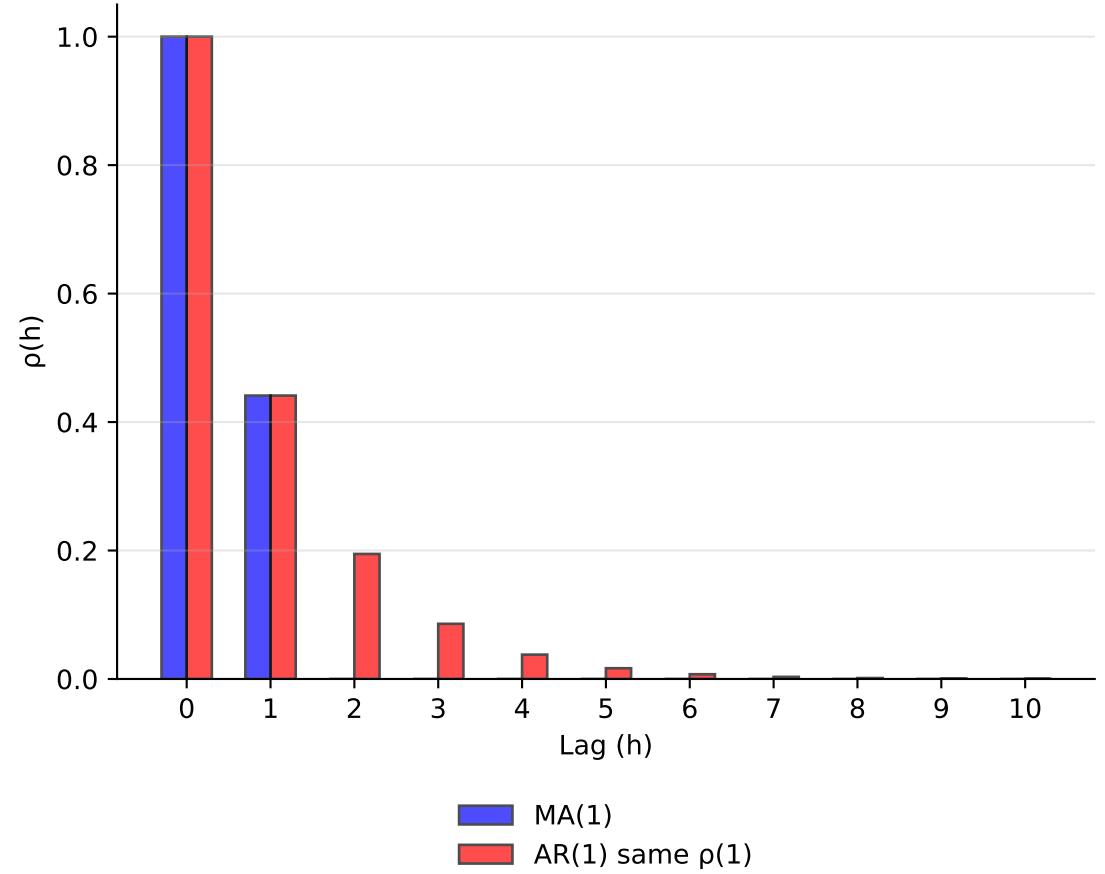
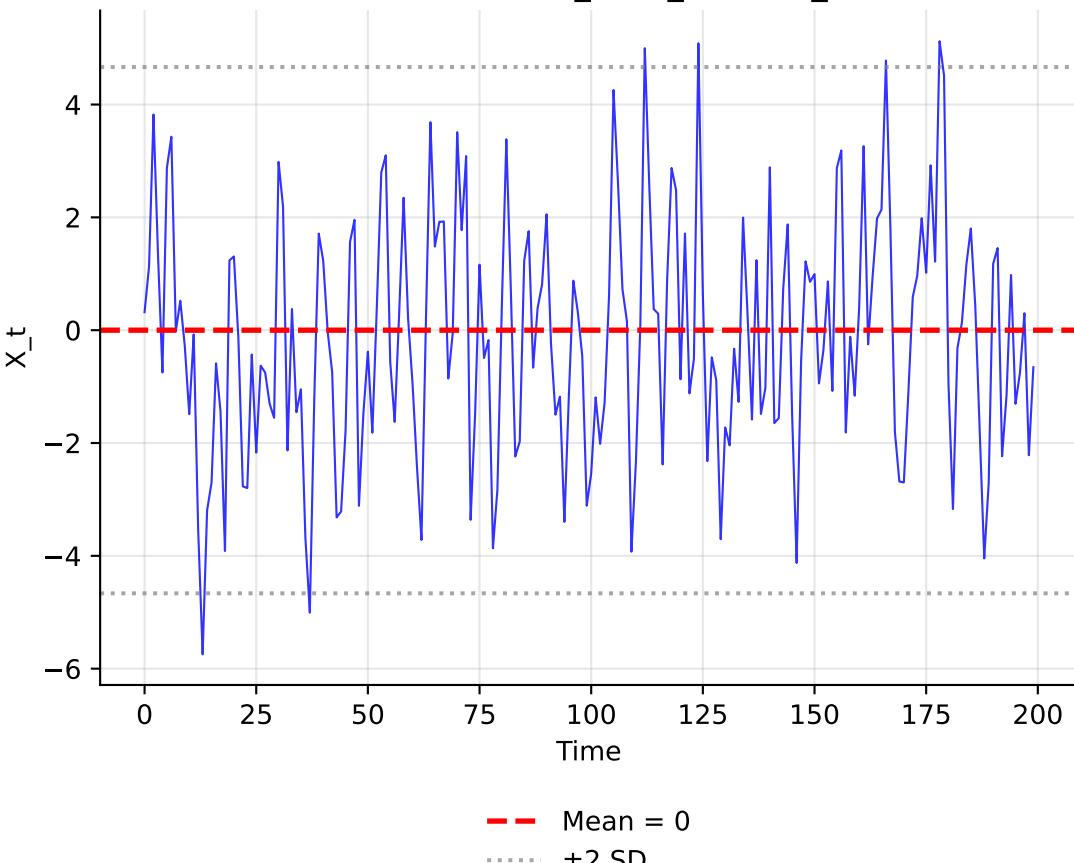


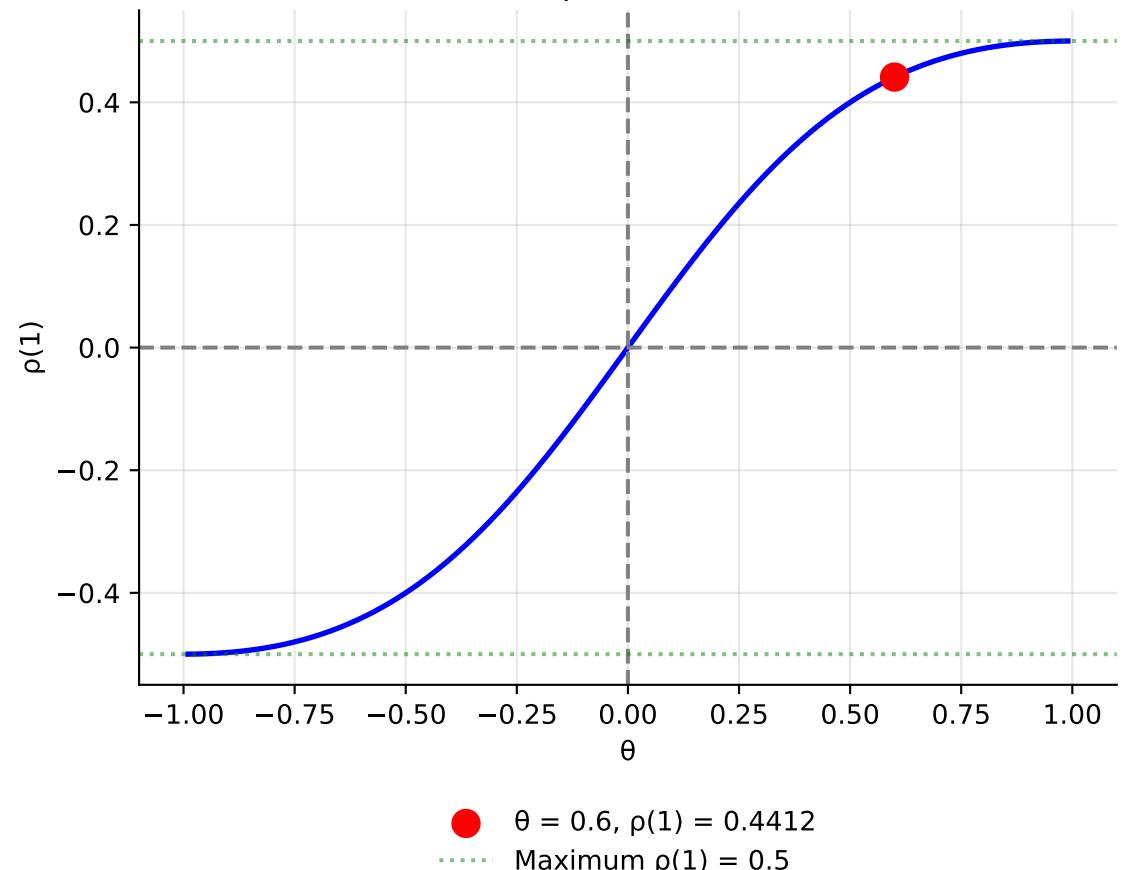
ACF: MA(1) cuts off vs AR(1) decays



Simulated MA(1): $X_t = \varepsilon_t + 0.6\varepsilon_{t-1}$



MA(1): $\rho(1) = \theta/(1+\theta^2)$



MA(1) Process Summary

Model: $X_t = \varepsilon_t + \theta\varepsilon_{t-1}$

Given: $\theta = 0.6$
 $\sigma^2 = 4$

Results:

$$\begin{aligned} E[X_t] &= \theta \\ \text{Var}(X_t) &= \sigma^2(1 + \theta^2) = 5.44 \\ \gamma(1) &= \theta\sigma^2 = 2.4 \\ \rho(1) &= \theta/(1+\theta^2) = 0.4412 \\ \rho(2) &= \theta \text{ (and } \rho(h) = \theta \text{ for } h > 1) \end{aligned}$$

Key Feature:

ACF CUTS OFF at lag 1!
 This identifies MA(1) vs AR processes.

Invertibility: $|\theta| < 1$ required