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Exercise 3.1.2

MA(2)

$$X(t) = a(t) + 0.2a(t-1) - 0.48a(t-2)$$

$$\rho_k = \frac{-\theta_k + \sum_{j=1}^{q-k} \theta_j \theta_{j+k}}{1 + \sum_{j=1}^{2} \theta_j^2} \qquad k = 1, 2 \ldots, 2 \qquad k > 2$$

$= 0.$ $\qquad \theta_1 = -0.2 \quad \theta_2 = 0.48$

ρ_0:

$\rho_0 = 1$ by definition

ρ_1: $\qquad \frac{-(-0.2) + (-0.2)(0.48)}{1 + (-0.2)^2 + 0.48^2} = \frac{0.104}{1.2704} = \boxed{0.08186}$

$k = 1$

ρ_2:

$k = 2$ $\qquad \frac{-0.48}{1 + (-0.2)^2 + 0.48^2} = \frac{-0.48}{1.2704} = \boxed{-0.377835}$

ρ_3:

$k = 3 \rightarrow 3 > 2 \rightarrow k > q \rightarrow 0$ $\boxed{0 \text{ by definition}}$