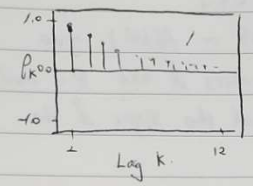
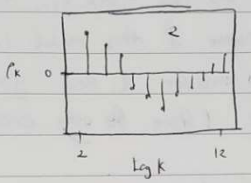
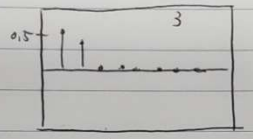
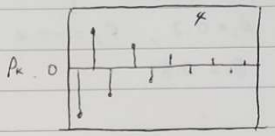
Date: Page:

3. Consider the following four autocorrelation plots









For each of the models below, choose one of the four plots, 1-4, that best presents what you think ρ_k will look like. Explain your reasoning.

(a) AR(2), with $\phi_1 = 1.6$ and $\phi_2 = -0.8$

$\phi_1^2 + 4\phi_2 = 2.56 - 3.2 = -0.64 \Rightarrow$ complex and different "Wave" ②

(b) MA(2), with $\theta_1 = -0.7$ and $\theta_2 = -0.49$

$\rho_1 = \frac{0.7 + 0.693}{1 + 0.49 + 0.9801} = \frac{1.393}{2.4701} = 0.56$

$\rho_2 = \frac{0.49}{2.4701} = 0.4$, ρ_3 must be very weak. so ③

(c) AR(2), with $\phi_1 = 0.5$ and $\phi_2 = 0.3$

$\phi_1^2 + 4\phi_2 = 0.25 + 1.2 = 1.45 > 0$ real and different

①

(d) AR(1), with $\phi = -0.8$

④ because it starts near -0.8 and it goes negative and positive continuously.