7/7 points (100.00%)

Quiz, 7 questions

✓ Congratulations! You passed!

Next Item



1/1 points

1.

For a weakly stationary process, which of the following are true?



The mean function is constant.

Correct

Yes! Everywhere we look on the process, the mean is the same.



The variance function is constant.

Correct

Yes! Everywhere we look on the process, the variance is the same.



The autocovariance is constant.

Un-selected is correct



1/1 points

2.

A random walk is an example of a weakly stationary process.



Yes.



No.

Correct

That's right! We don't have constancy of variance (and may not have **7/7 points (100.00%)** constancy of mean).

Quiz, 7 questions



1/1 points

3.

A moving average is an example of a weakly stationary process.



Yes.

Correct

You bet! the mean is constant (equal to zero) and the autocovariance depends just upon lag spacing.



No.



1/1 points

4.

Suppose you have the MA(2) process:

$$X_t = Z_t + .5 Z_{t-1} + .5 Z_{t-2}, \quad \sigma^2 = 1$$

How many terms in the ACF are nonzero?

- There are no nonzero terms.
- Exactly 2.
- Exactly 3.

Correct

Yes! Using our formulas, we obtain 3 nonzero terms:

7/7 points (100.00%)

Quiz, 7 questions

$$\gamma(k) = \sum_{i=0}^{2-k} \beta_i \ \beta_{i+k}$$

$$\rho(k) = \frac{\gamma(k)}{\gamma(0)}$$

An infinite number.



1/1 points

5.

Let's think about our MA2 process from the last question.

$$X_t = Z_t + .5 Z_{t-1} + .5 Z_{t-2}, \quad \sigma^2 = 1$$

What is the autocovariance at lag zero? That is, calculate $\gamma(0)$.

1.5

Correct Response

Great job! We perform the following calculation.

 $\gamma(0) = \sum_{i=0}^{2} \beta_i \ \beta_i = \beta_0 \beta_0 + \beta_1 \beta_1 + \beta_2 \beta_2 = 1^2 + .5^2 + .5^2 = 1.5$

7/7 points (100.00%)

Quiz, 7 questions



1/1 points

6.

Again, consider the MA2 example.

$$X_t = Z_t + .5 Z_{t-1} + .5 Z_{t-2}, \quad \sigma^2 = 1$$

calculate the autocorrelation function at lag 2.

0.3333

Correct Response

Great work. We calculate as

$$\gamma(2) = \sum_{i=0}^{0} \beta_i \ \beta_{i+2} = 1 \cdot .5 = .5$$

$$\rho(2) = \frac{\gamma(2)}{\gamma(0)} = \frac{0.5}{1.5} = \frac{1}{3}$$

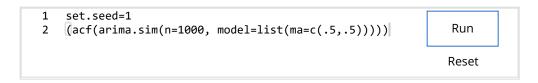
points

Stationarity7.

7/7 points (100.00%)

Quiz, 7 questions

Run the following code to simulate our MA(2) process as shown above. Be sure to replace XX's with the appropriate coefficients.



From your graph or the function output, estimate $\rho(1)$.



Correct

Terrific! That is $\rho(1)$.







