

1. What is the intuitive meaning of $\mathbb{E}(P_t - P_{t-1} | P_{t-1}, P_{t-2}, \dots) = 0$?

2. What is the intuitive meaning the law of iterative expectation?

3. For the random walk $P_t = \mu + P_{t-1} + \epsilon_t$ to be a martingale, what do you need to assume?

4. What is a main problem with arithmetic random walk?

5. For the geometric Brownian motion (GBM), if we define $P_t^* := \ln P_t$, which Random Walk Model X does P_t^* correspond to?

6. Is the scaling law for the variance of log returns linear in time?

7. What is the variance of a χ_{17}^2 random variable?

8. You have 500 daily returns. How many non-overlapping 8-daily returns can you get?

9. If the sample variance of 7-daily returns is 0.1, and if prices follow random walk, what is the estimate for the daily variance (4 decimals, e.g. 0.1234)?

10. Which topics are still unclear to you? What specific questions do you have for me?