# LAB-2 REPORT

Q1)

Here we are trying to simulate a jump diffusion process with constant parameters. This plot shows 10 sample paths for a stock price modeled by a jump-diffusion process with constant parameters. All paths start at a price of 5.

- Paths exhibit both continuous growth and sudden jumps.

- Volatility is visibly higher(30%), contributing to more erratic behavior.

- The jump magnitudes are more significant and frequent.

Jump Diffusion Process (10 Sample Paths)
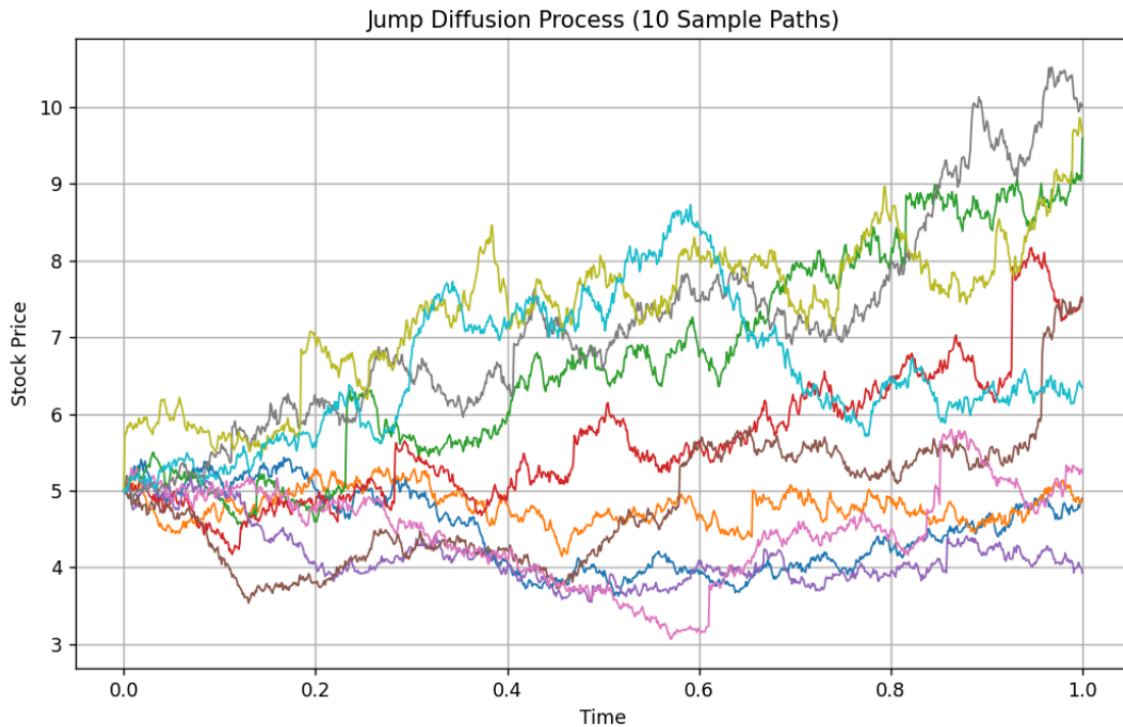
Q2)
This plot illustrates 10 sample paths where the drift μ(t) and volatility σ(t) are functions of time. The paths start at 5 but exhibit different behavior compared to the first plot. The drift μ(t) = 0.0325 – 0.25 * t is initially positive but becomes negative as time progresses, causing some paths to trend downwards in the latter half of the period.

- Smaller and more consistent price movements.

- Jump sizes appear more controlled or regulated.

- Reduction in drift in the latter half of the simulation time.

Jump Diffusion with Time-Dependent μ(t) and σ(t)