Monte Carlo Simulation Assignment -9

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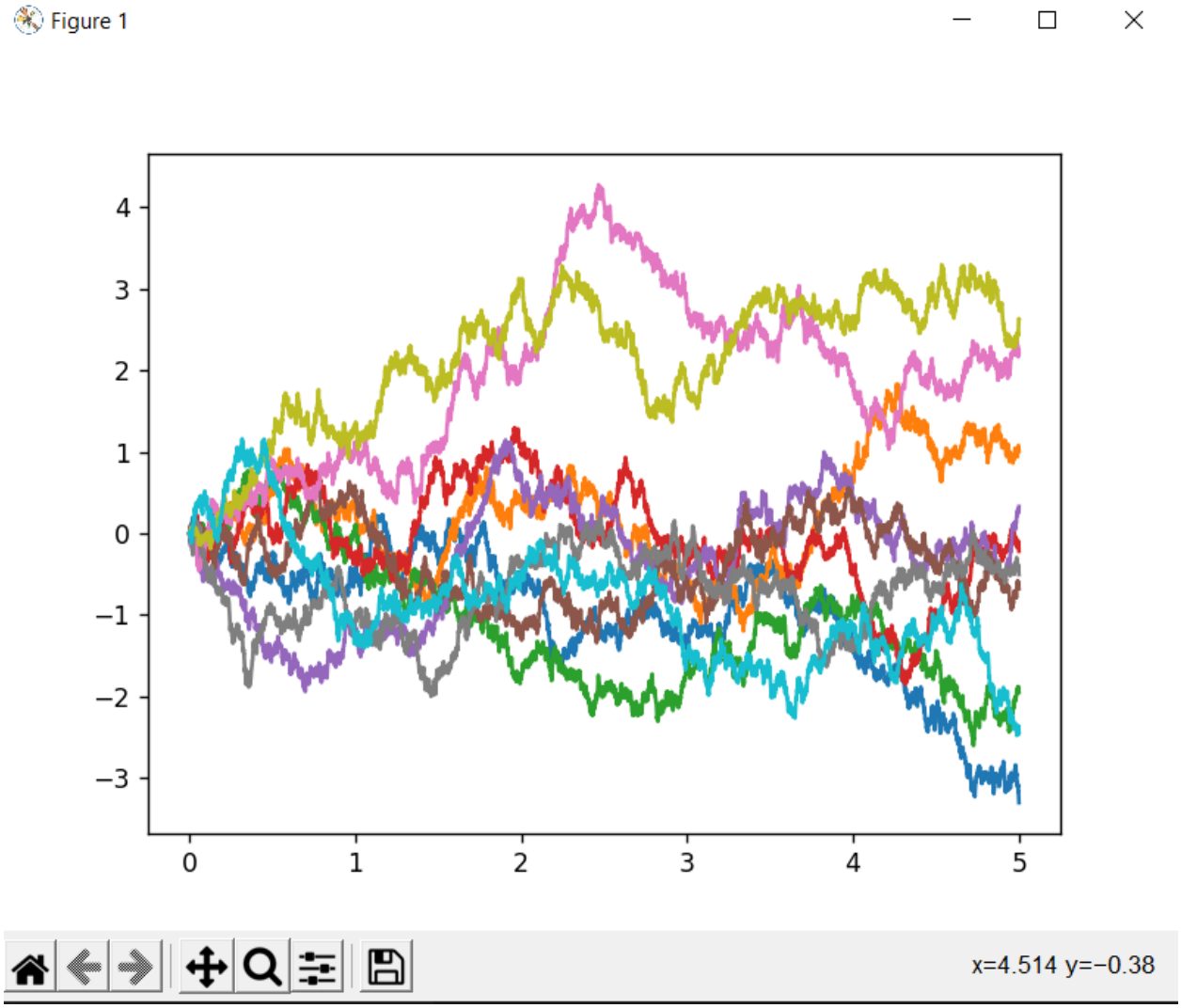
Question 1-

W(ti+1) = W(ti) + ((ti+1 − ti)^0.5)Zi+1 ; i = 0, 1, 2, …., 4999

ti+1 - ti = 5 / 5000 = 0.001

W(0) = 0

```
Estimated value of E[W(2)] is 4.8753524776762315e-06
Estimated value of E[W(5)] is -0.0070720723541660 68
PS C:\Users\User\Desktop\monte assignment 9>
```



Question 2-

$X(t_{i+1}) = X(t_i) + \mu(t_{i+1} - t_i) + \sigma(\sqrt{(t_{i+1} - t_i)}Z_i$; i = 0, 1, 2, ..., 4999

$t_{i+1} - t_i = 5 / 5000 = 0.001$

$\mu = 0.06$

$\sigma = 0.3$

$X(0) = 5$

```
PS C:\Users\User\Desktop\monte assignment 9> & C:/Us
nloads/q2-2.py
Estimated value of E[X(2)] is 5.0031208666207965
Estimated value of E[X(5)] is 5.010537853923514
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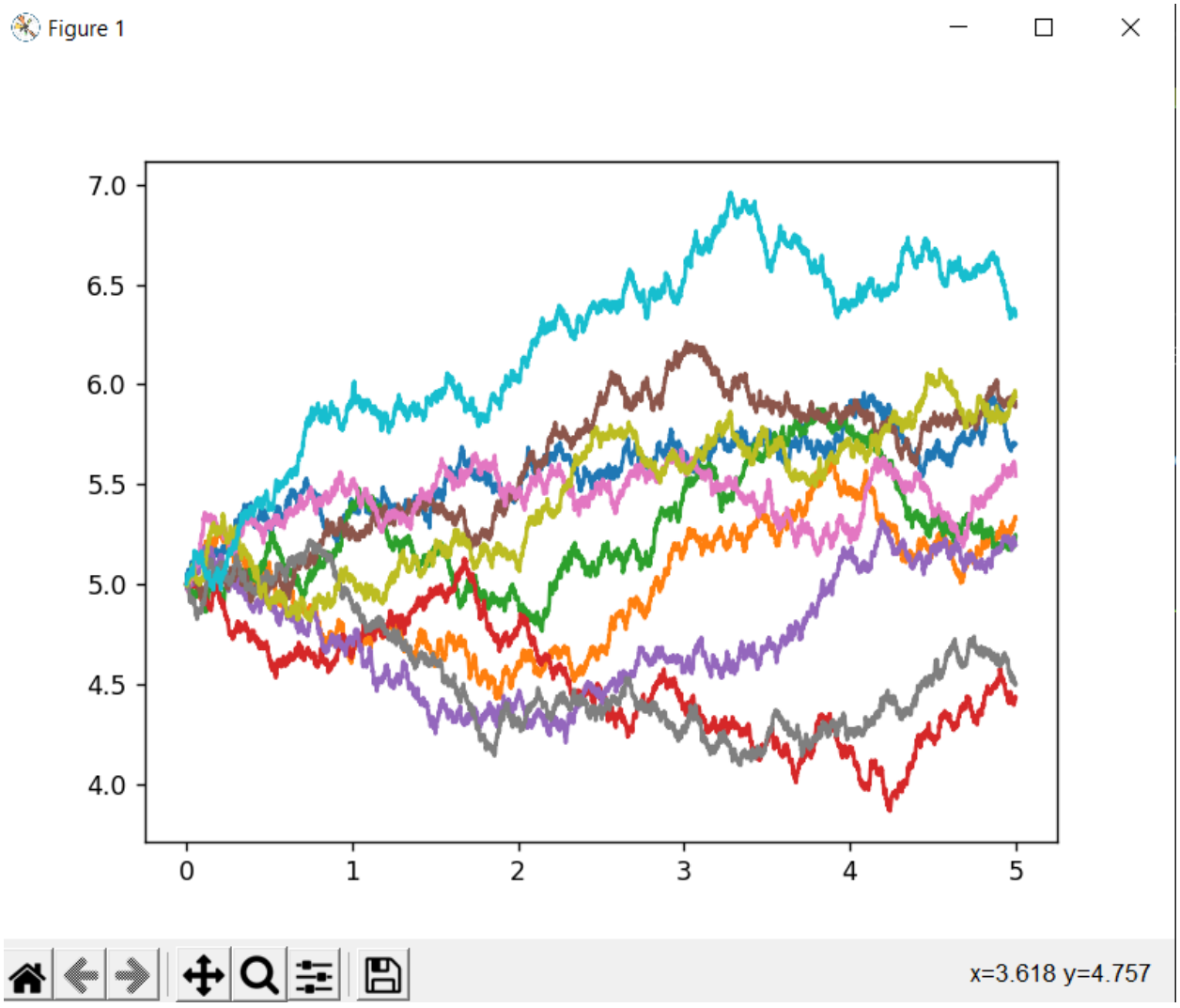

Question 3-

Y(ti+1) = Y(ti) + μ(ti+1 − ti) + σ(√(ti+1 − ti))Zi ; i = 0, 1, 2, ..., 4999

ti+1 - ti = 5 / 5000 = 0.001

μ(t) = 0.0325 − 0.05t

σ(t) = 0.012 + 0.0138t + 0.00125t^2

Y(0) = 5

```
PS C:\Users\User\Desktop\monte assignment 9> & C:/U
nloads/q3-2.py
Estimated value of E[X(2)] is 5.000047212929534
Estimated value of E[X(5)] is 5.0002527428011465
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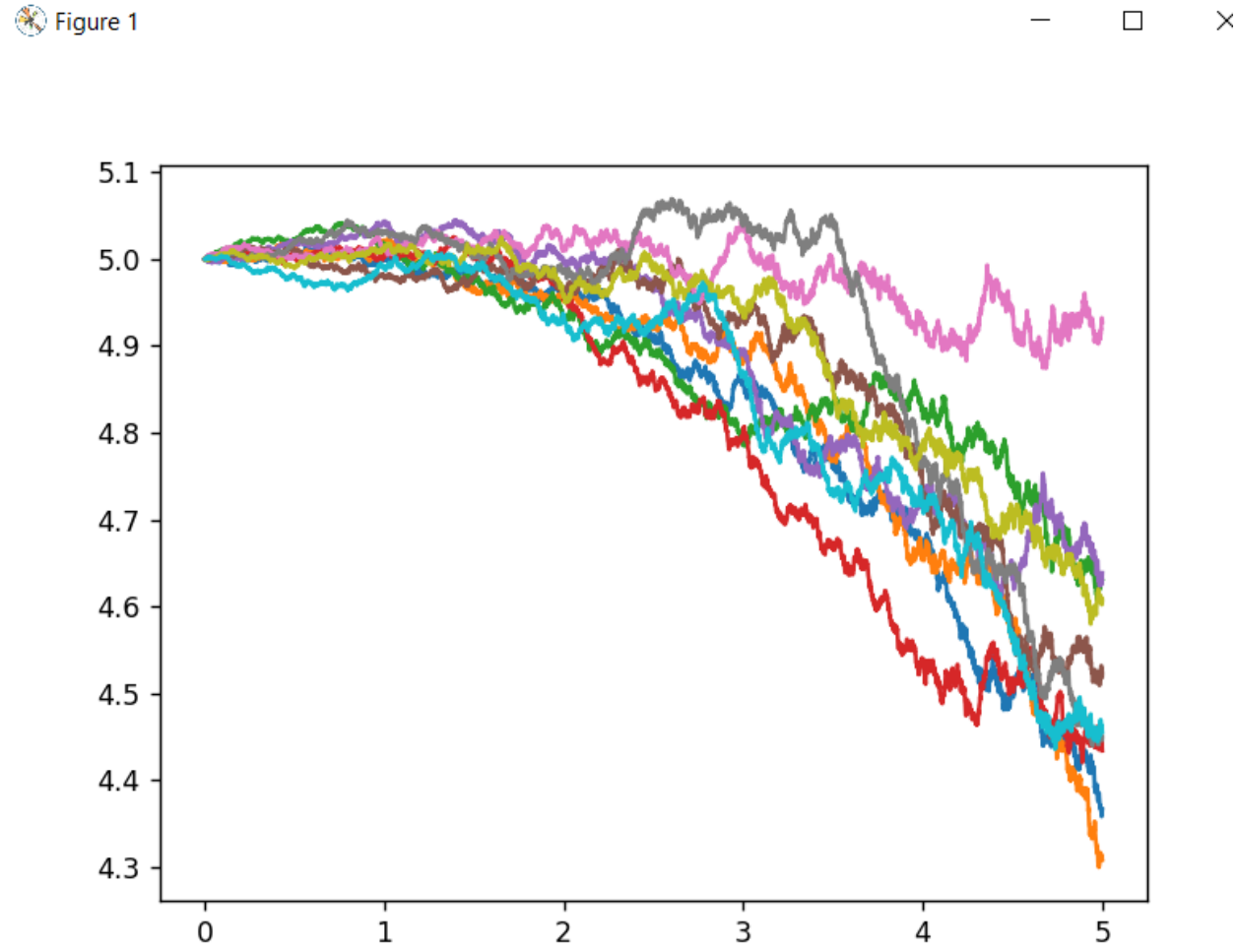

Thank You