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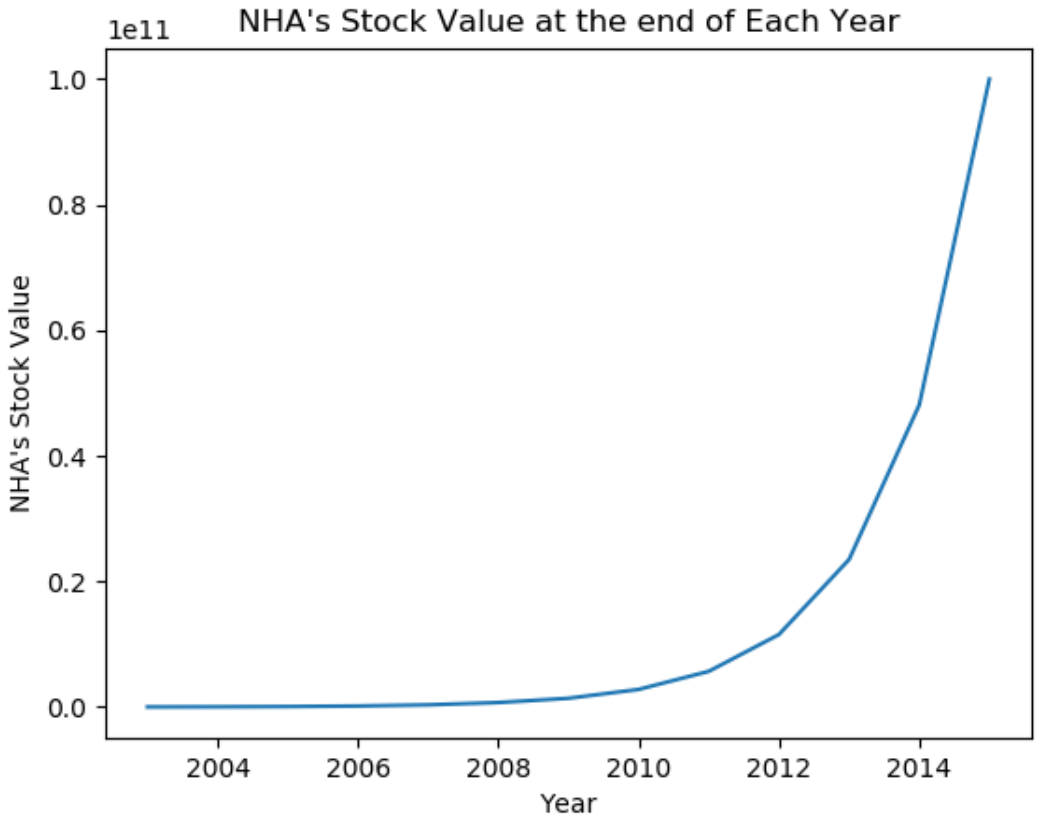
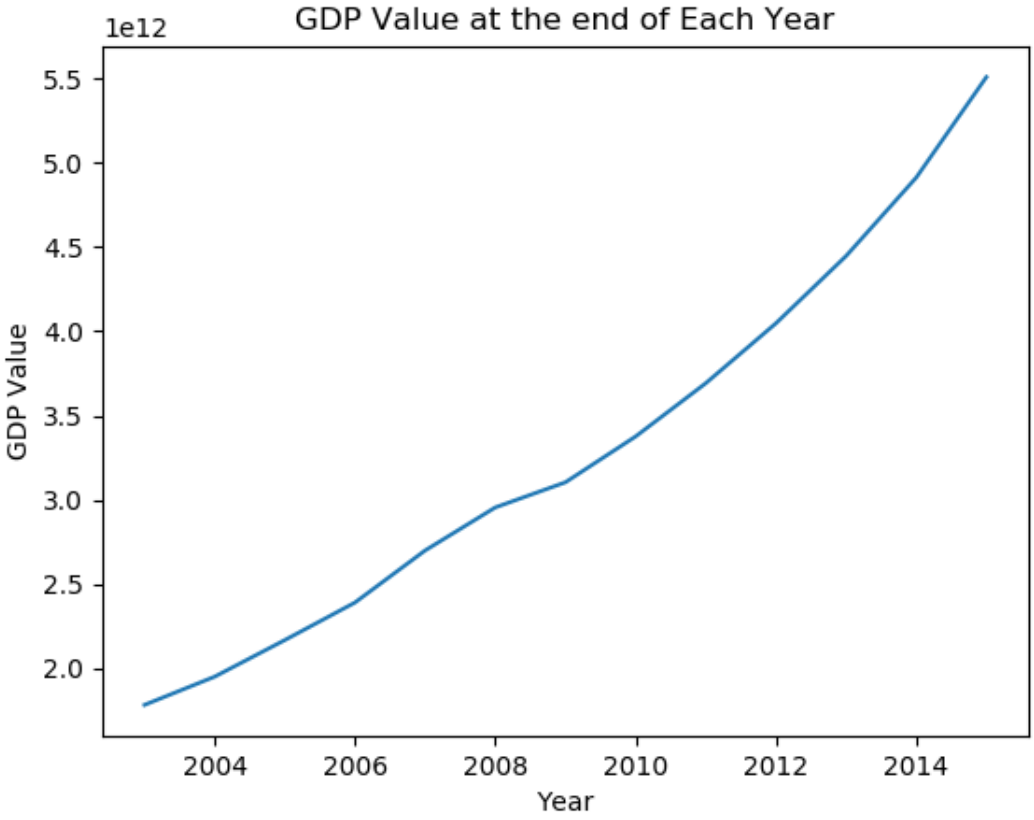
AMS 326
Test 3
4/12/2018

Test 3-1

This problem asks us to consider a company with initial value \$10M, and final value \$100B after 13 years of trading. We are given $\sigma = 0.1473\%$ and time, and must first find μ. After this, we will plot the stock values at the end of each year with respect to year. Next, we look at the value of the GDP, with mean $\mu = 0.03385\%$ and $\sigma = 0.01414$. Finally, we look for the time year where the GDP exceeds \$20.20T.
We guess three values for μ: 0.0027, 0.002725, 0.00275, and perform a quadratic interpolation with these points (similar to that in homework 2 and 3). After obtaining a polynomial and shifting it by -100B, we solve for the roots with a numpy command, and find $mu \approx 0.0027122$. Next is the plot of NHA's stocks with respect to time.



On the next page is a plot of GDP values with respect to year again.


GDP Value at the end of Each Year
1e12
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
GDP Value
2004
2006
2008
2010
2012
2014
Year