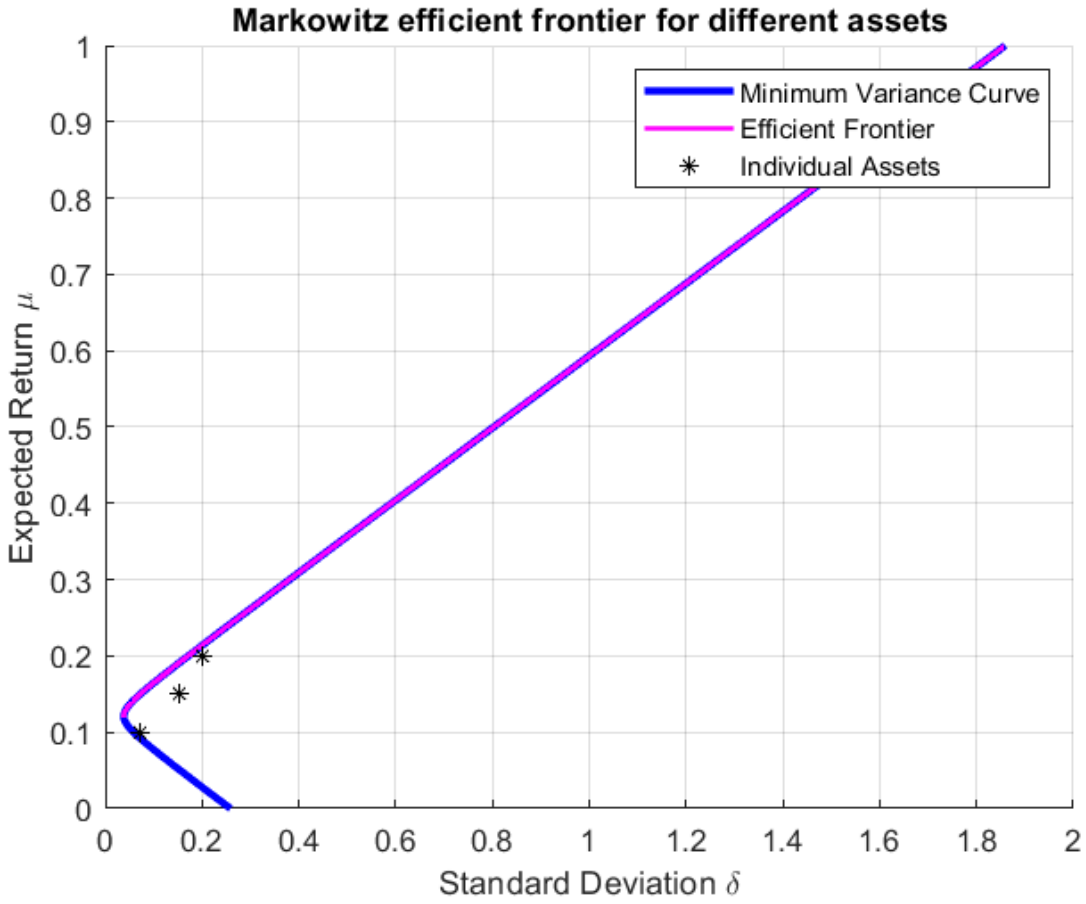
Lab 4

1)

Part A



Part B

Return	Risk	W1	W2	W3
0.00	0.2588	2.5505	-0.4495	-1.1009
0.10	0.0587	1.1193	0.1193	-0.2385
0.20	0.1714	-0.3119	0.6881	0.6239
0.30	0.3805	-1.7431	1.2569	1.4862
0.40	0.5913	-3.1743	1.8257	2.3486
0.50	0.8025	-4.6055	2.3945	3.2110
0.60	1.0138	-6 .0367	2.9633	4.0734
0.70	1.2252	-7.4679	3.5321	4.9358
0.80	1.4366	-8.8991	4.1009	5.7982
0.90	1.6481	-10.3303	4.6697	6.6606
1.00	1.8595	-11.7615	5.2385	7.5229

Part C

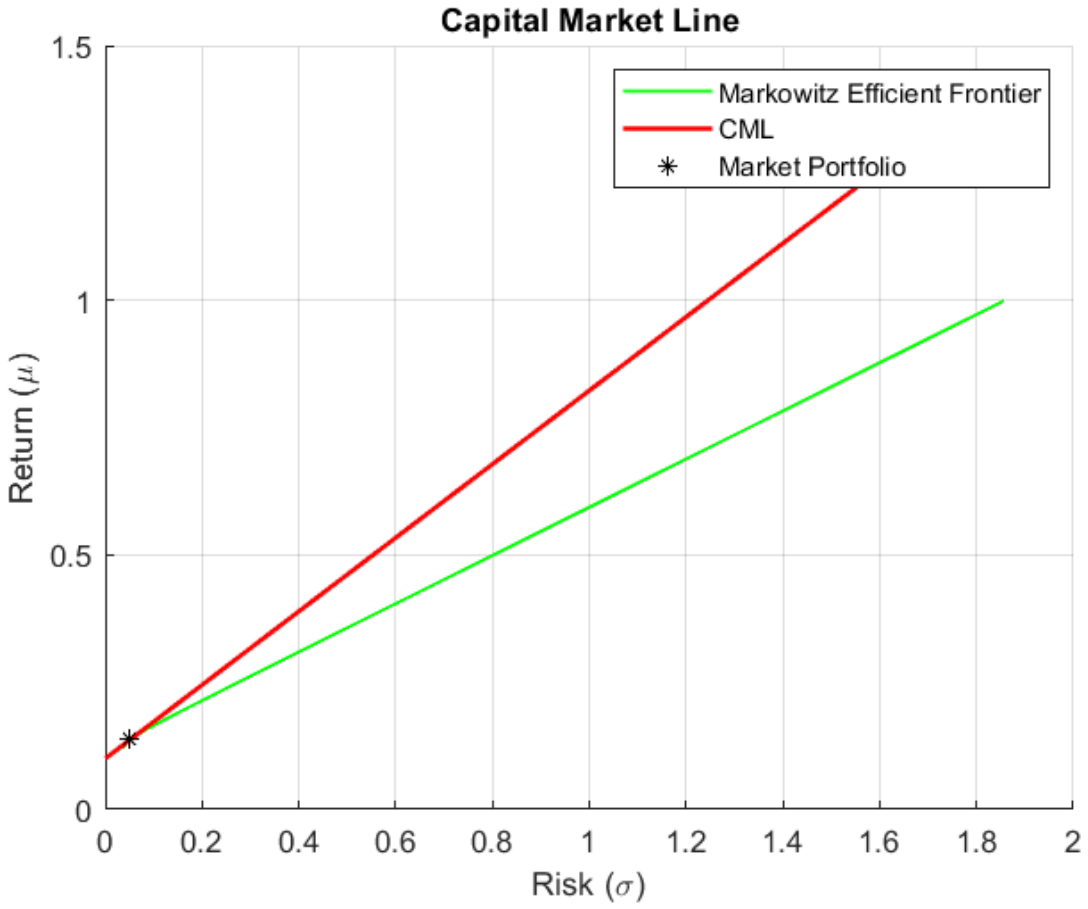
```
Maximum Return Portfolio for 15 % risk:
Return: 0.1896 and Weights: -0.1624  0.6287  0.5338
Minimum Return Portfolio for 15 % risk:
Return: 0.0524 and Weights: 1.7998  -0.1512  -0.6486
```

Part D

```
Minimum Risk Portfolio for 18 % return:
Risk: 0.1306 and Weights: -0.0257  0.5743  0.4514
```

Part E

```
For 10 % risk-free return:
Weights of Market portfolio: 0.5938  0.3281  0.0781
Return on Market portfolio: 0.1367
Risk on Market portfolio: 0.0508
```



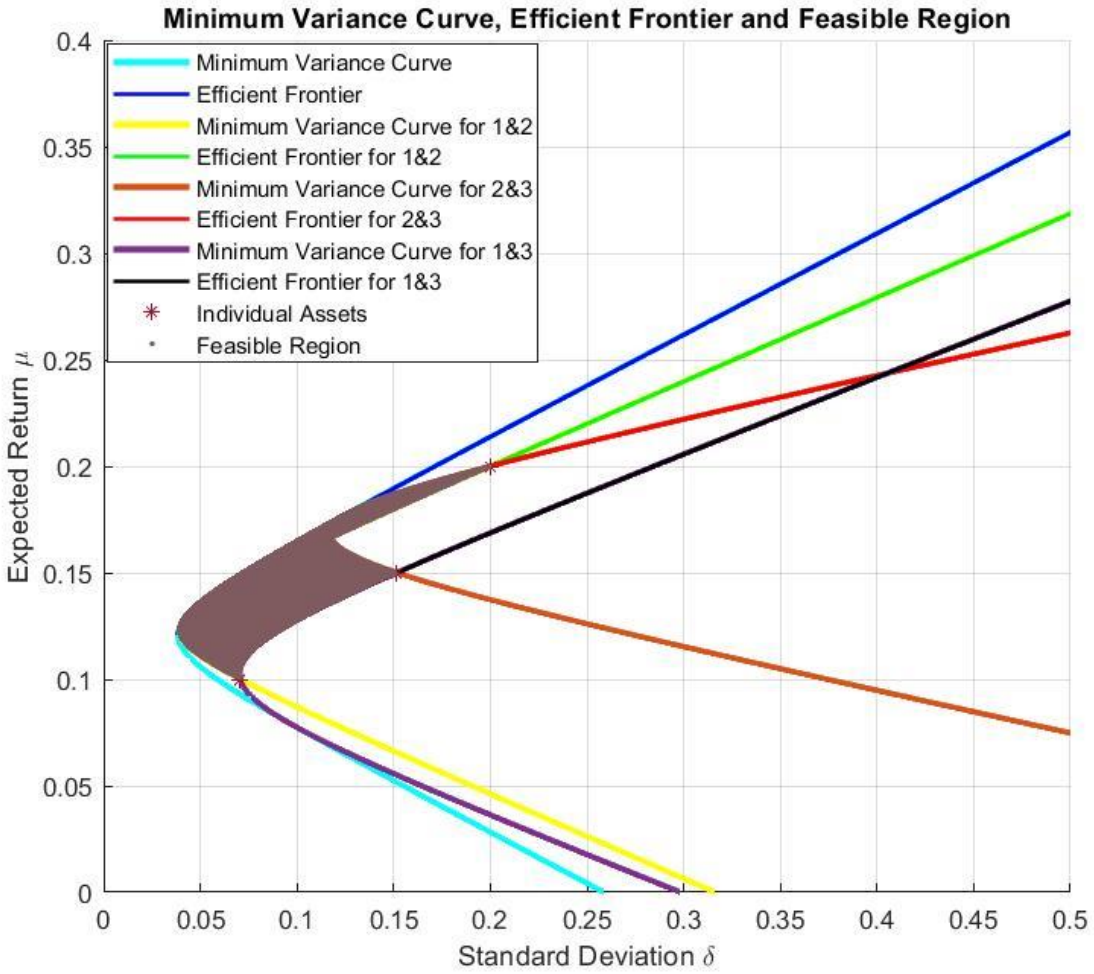
Capital Market Line:

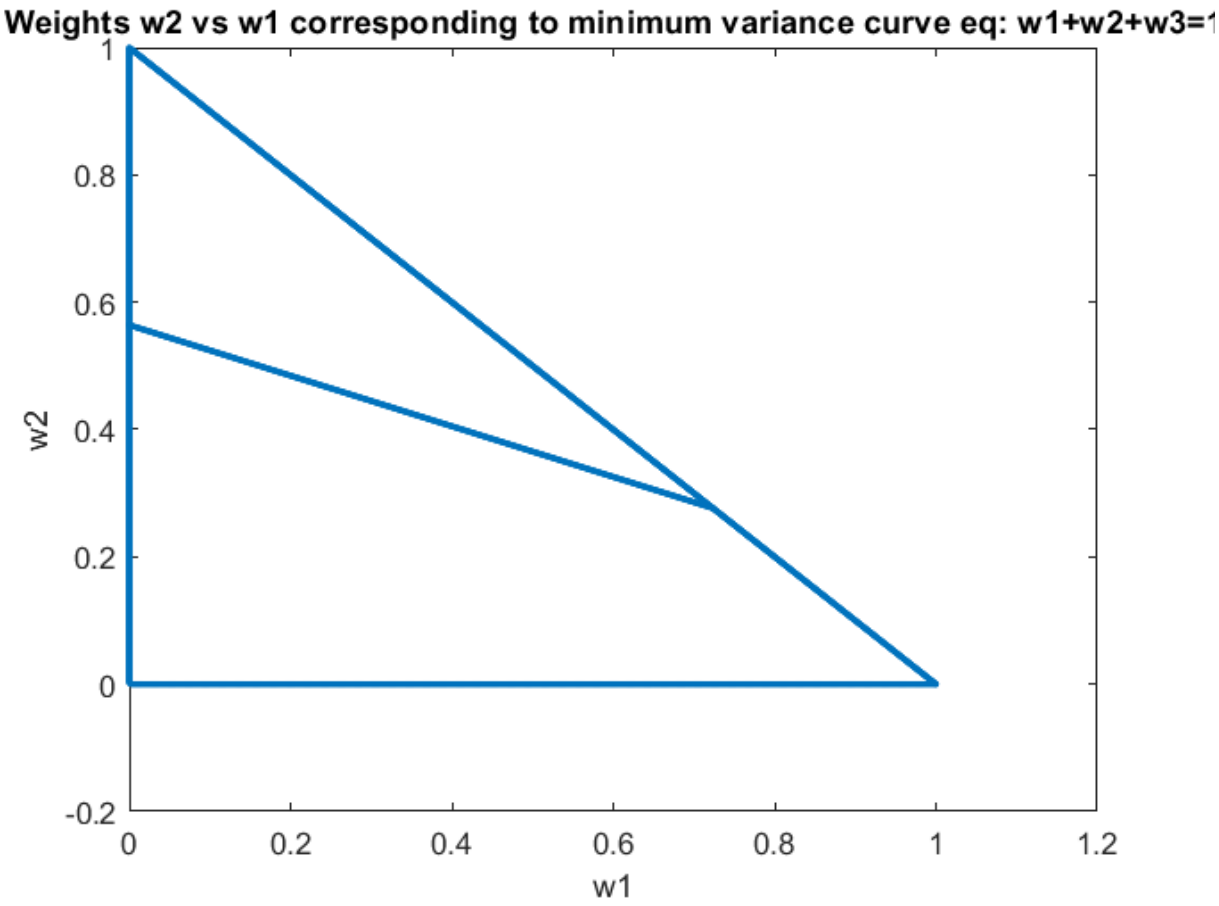
$$0.722649446289293313966320816024 4\, x + \frac{1}{10}$$

Part F

```
Portfolio for 10 % risk:
Risk-free Asset Weight: -0.9681
Risky Assets Weights: 1.1685  0.6458  0.1538
Portfolio for 25 % risk:
Risk-free Asset Weight: -3.9202
Risky Assets Weights: 2.9213  1.6144  0.3844
```

2)

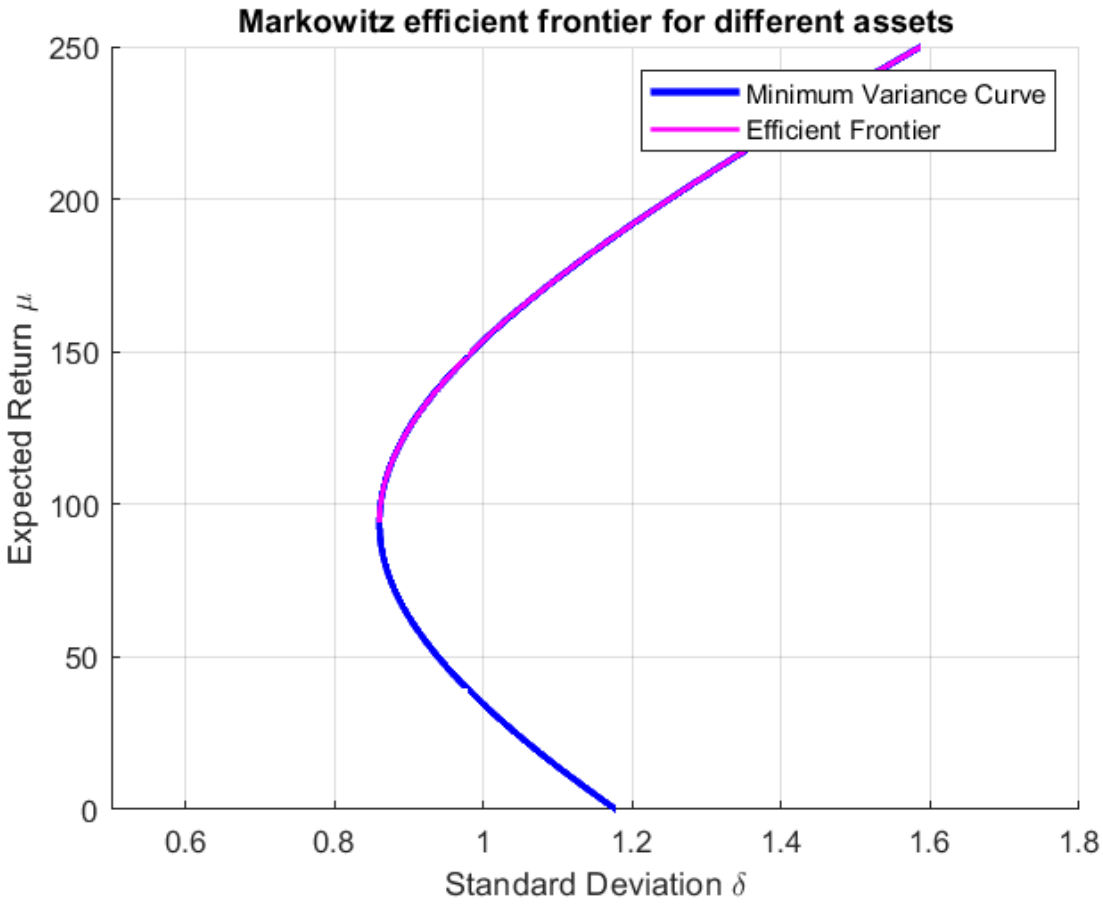




Equation satisfied by weights: w1+w2+w3=1

3)

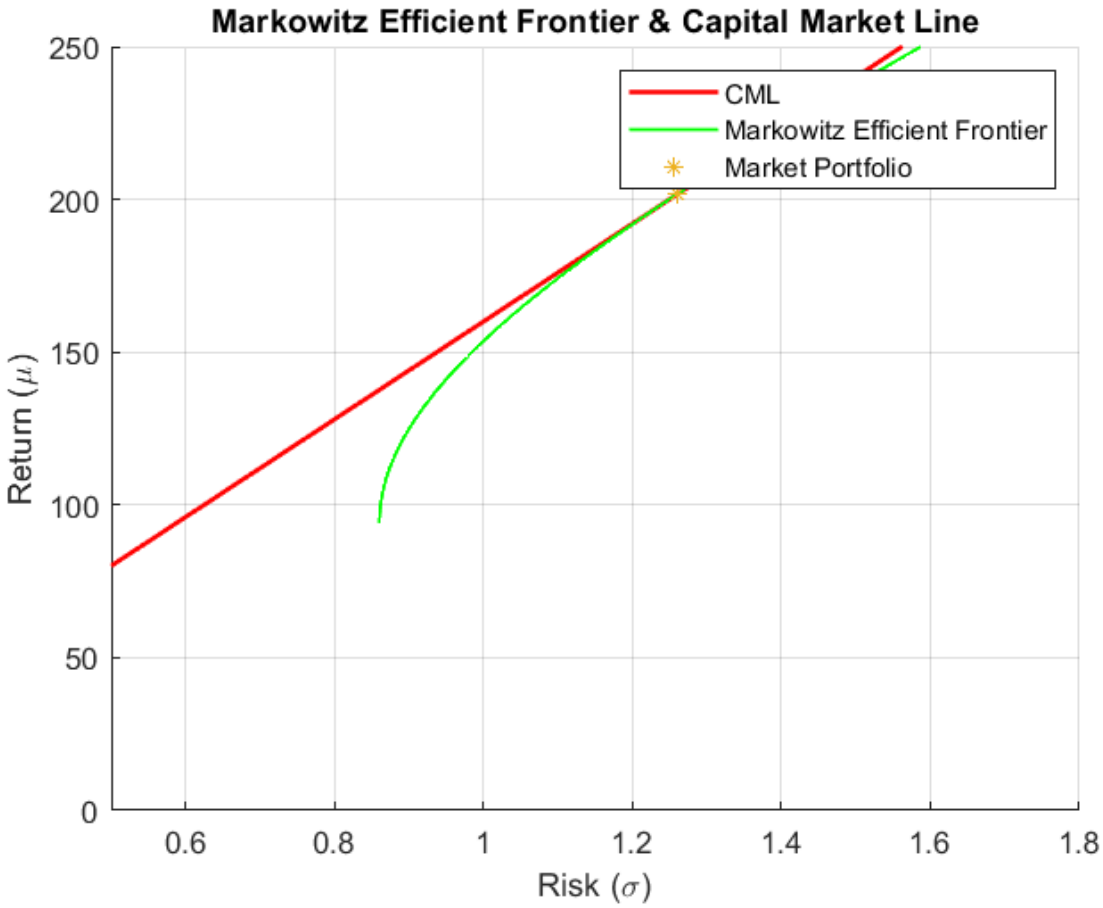
Part A



Part B

```
For 5 % risk-free return:
Weights of Market portfolio: 0.6581   0.5108   -0.0333
Return on Market portfolio: 201.5501
Risk on Market portfolio: 1.2594
```

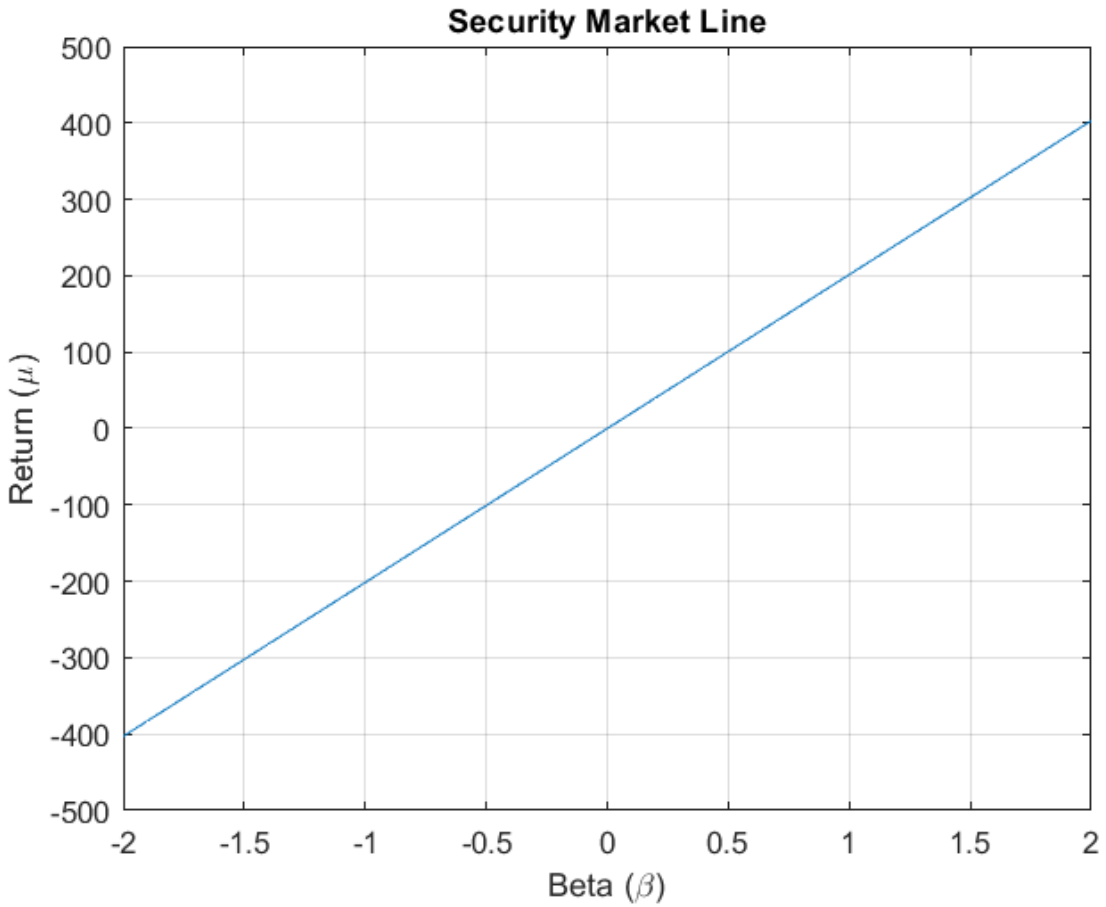
Part C



Capital Market Line:

$$160.00225542394616695673903450 37\, x + \frac{1}{20}$$

Part D



Security Market Line:

$$201.50007740104510389755887445062\,x + \frac{1}{20}$$