# Ma374-LAB 11

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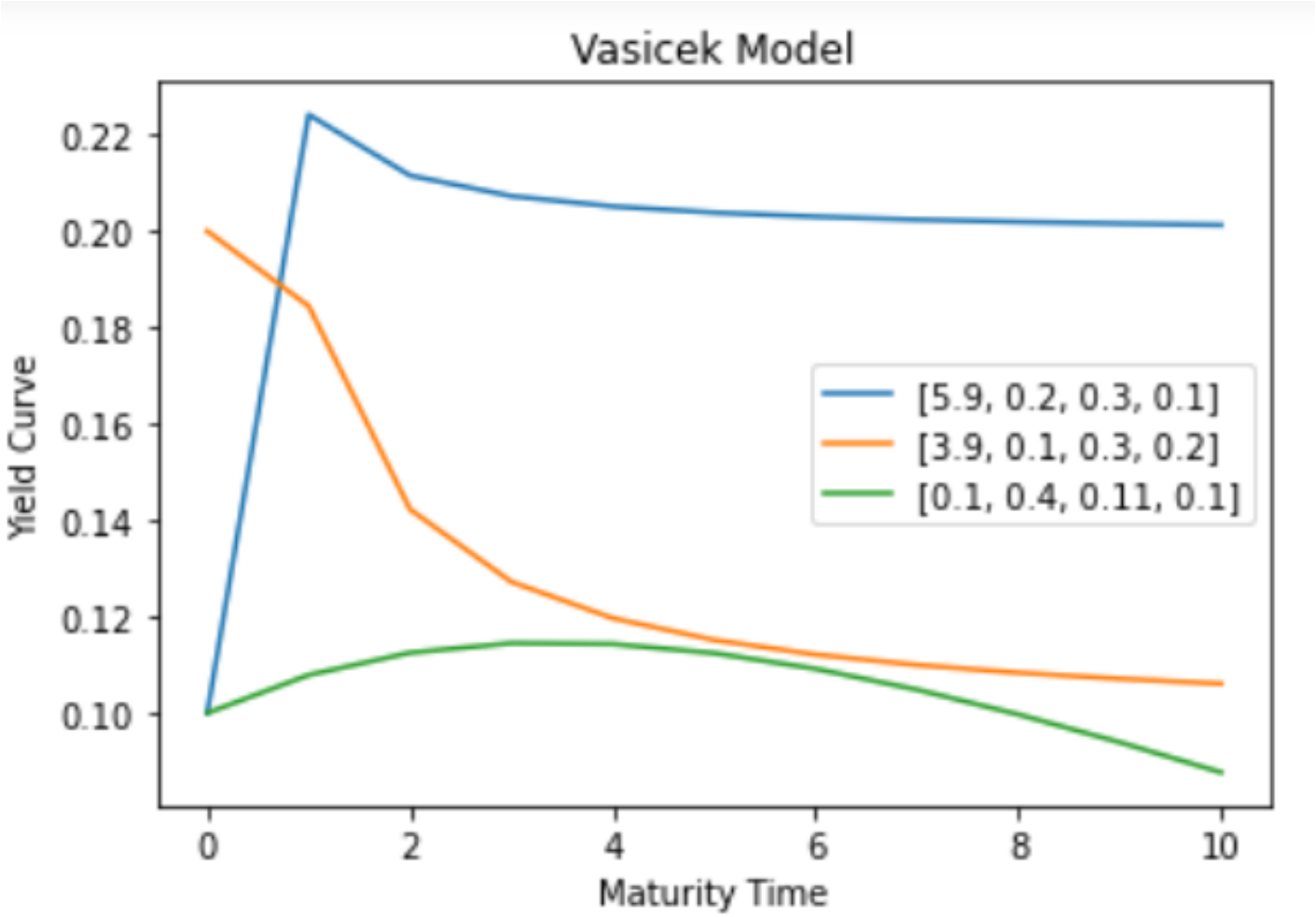
**Question 1:**

The Vasicek model is as follows:

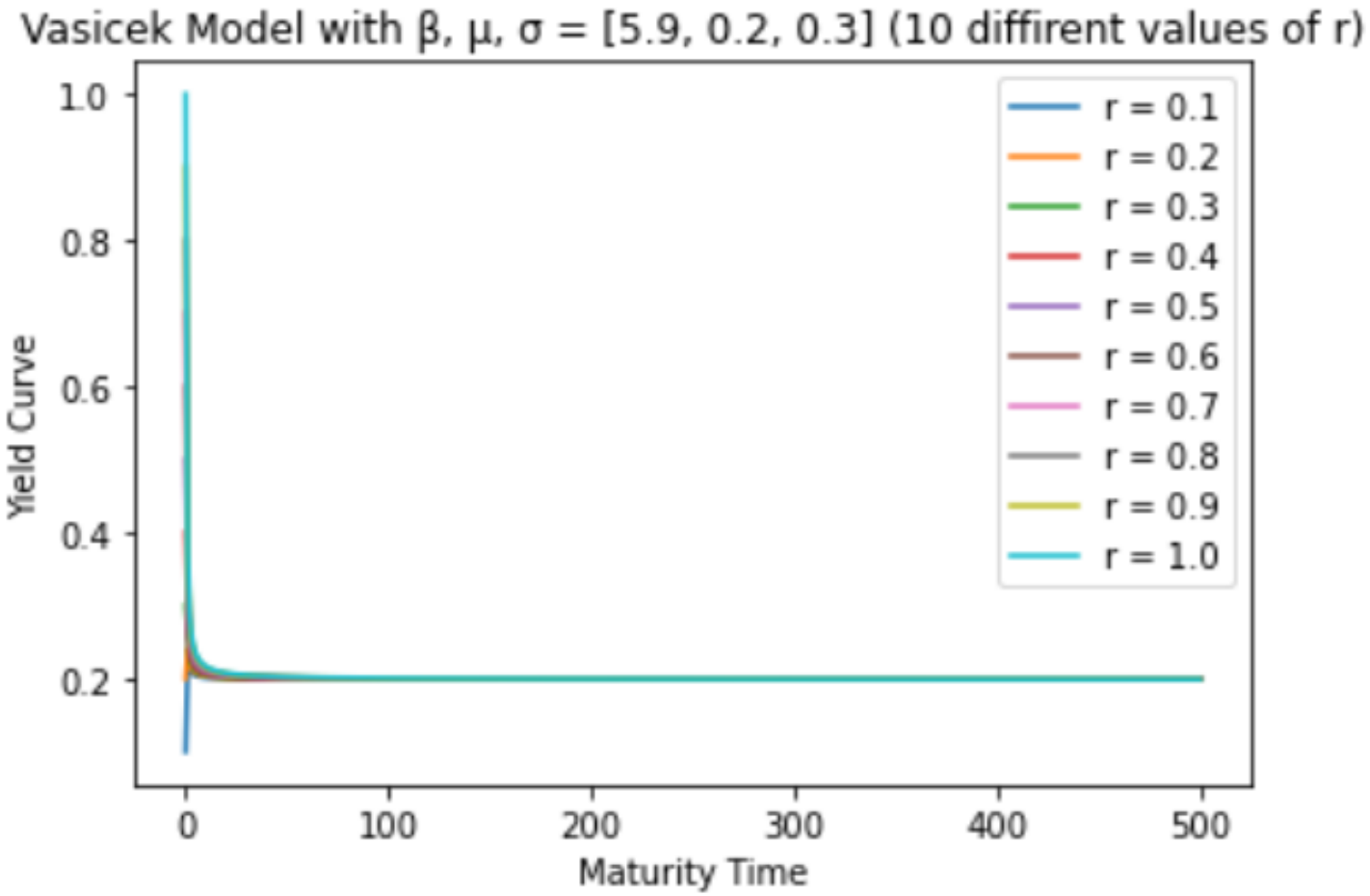
$$dr = \beta(\mu - r)dt + \sigma dW^Q$$

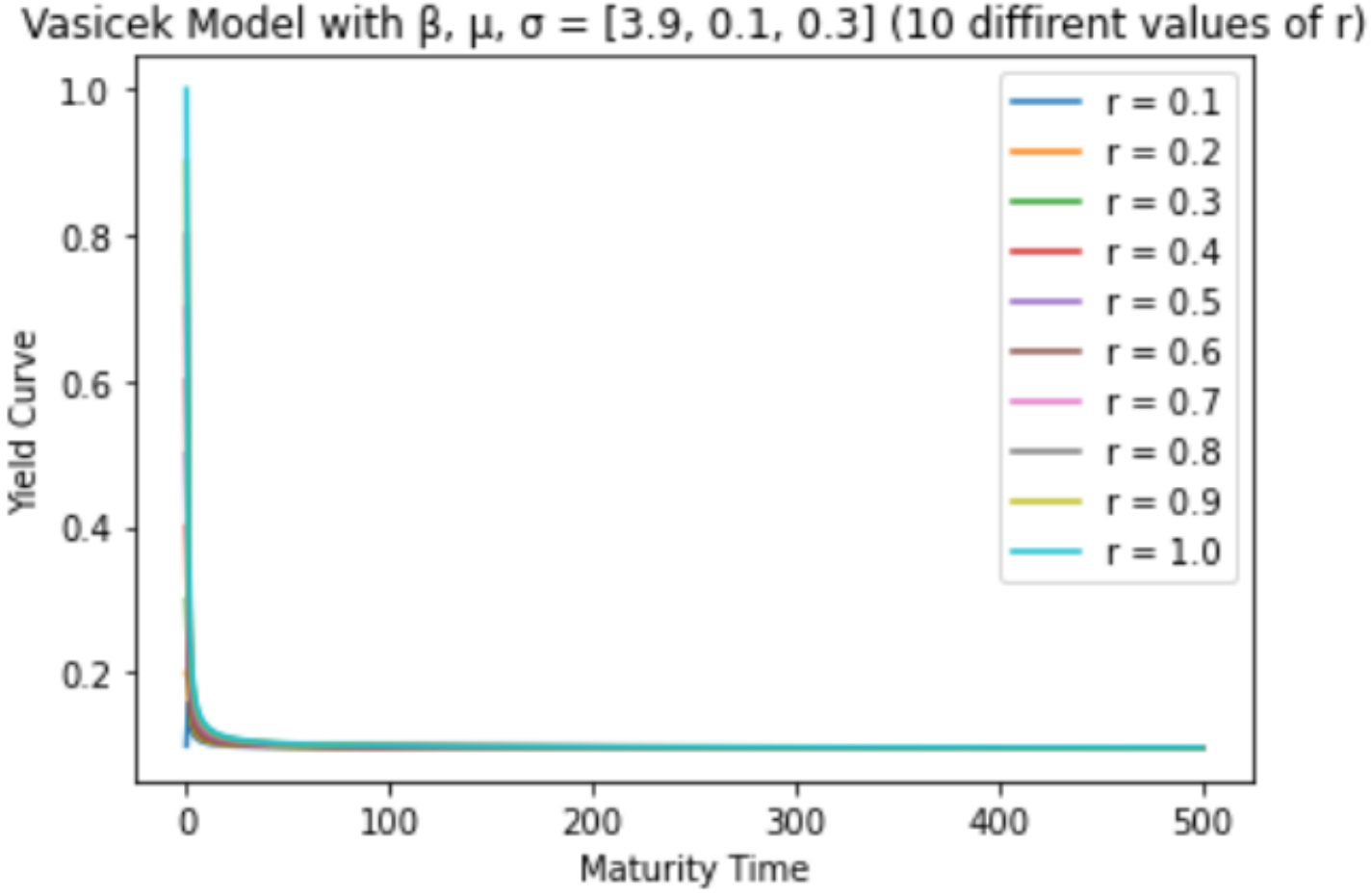
Plot Yield vs Maturity Time for 3 parameter sets [5.9,0.2,0.3,0.1], [3.9,0.1,0.3,0.2], and [0.1,0.4,0.11,0.1]:

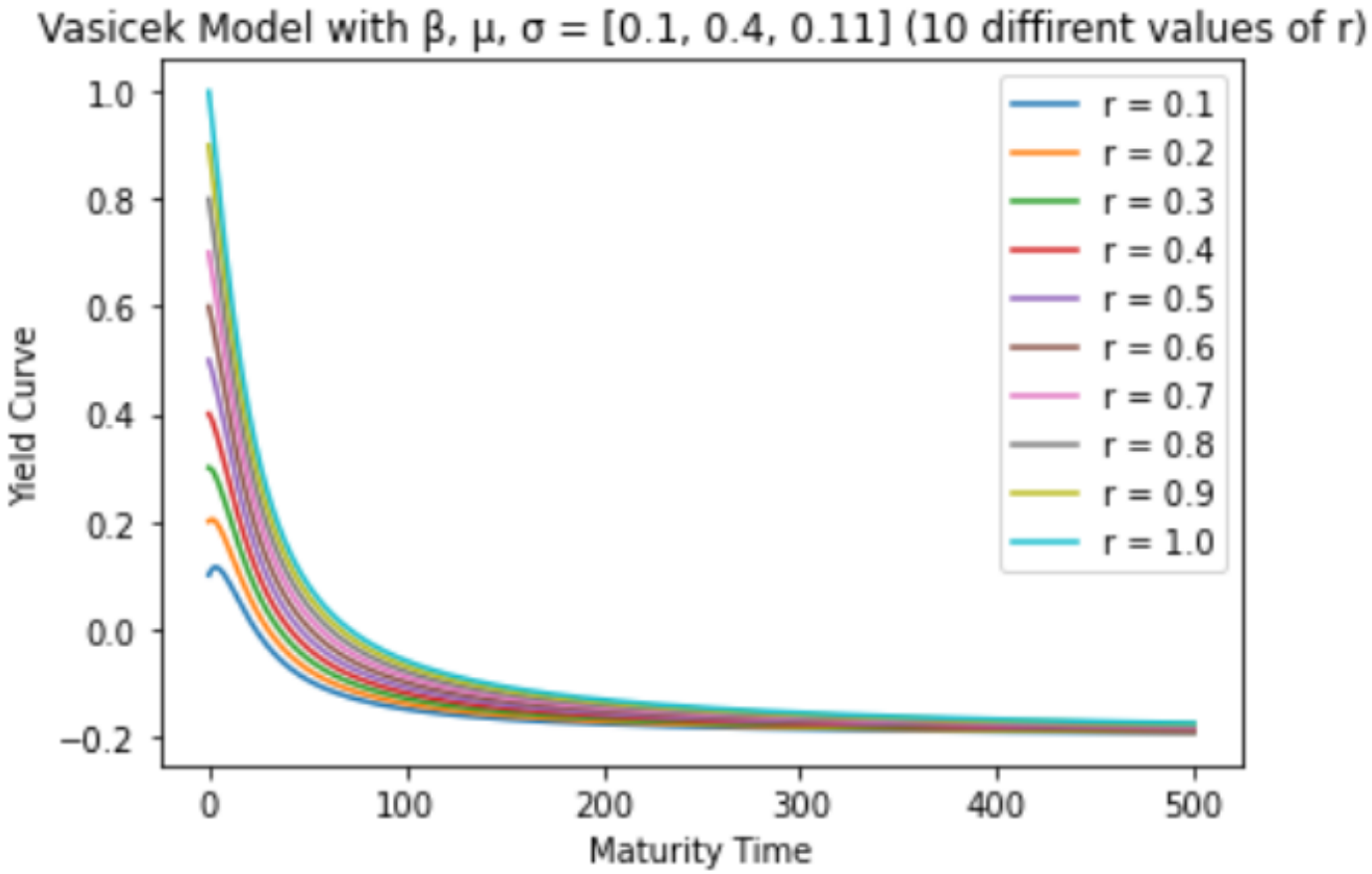
**Term Structure:**




Now, 10 different values of r (from 0.1 to 1) were chosen. Then, the Yield Curve vs Maturity Time was plotted out for each of the parameter sets (with 500 units).


Vasicek Model with β, μ, σ = [5.9, 0.2, 0.3] (10 diffirent values of r)
Yield Curve
Maturity Time
r = 0.1
r = 0.2
r = 0.3
r = 0.4
r = 0.5
r = 0.6
r = 0.7
r = 0.8
r = 0.9
r = 1.0
1.0
0.8
0.6
0.4
0.2
0
100
200
300
400
500


Vasicek Model with β, μ, σ = [3.9, 0.1, 0.3] (10 diffirent values of r)
Yield Curve
Maturity Time
r = 0.1
r = 0.2
r = 0.3
r = 0.4
r = 0.5
r = 0.6
r = 0.7
r = 0.8
r = 0.9
r = 1.0
1.0
0.8
0.6
0.4
0.2
0
100
200
300
400
500

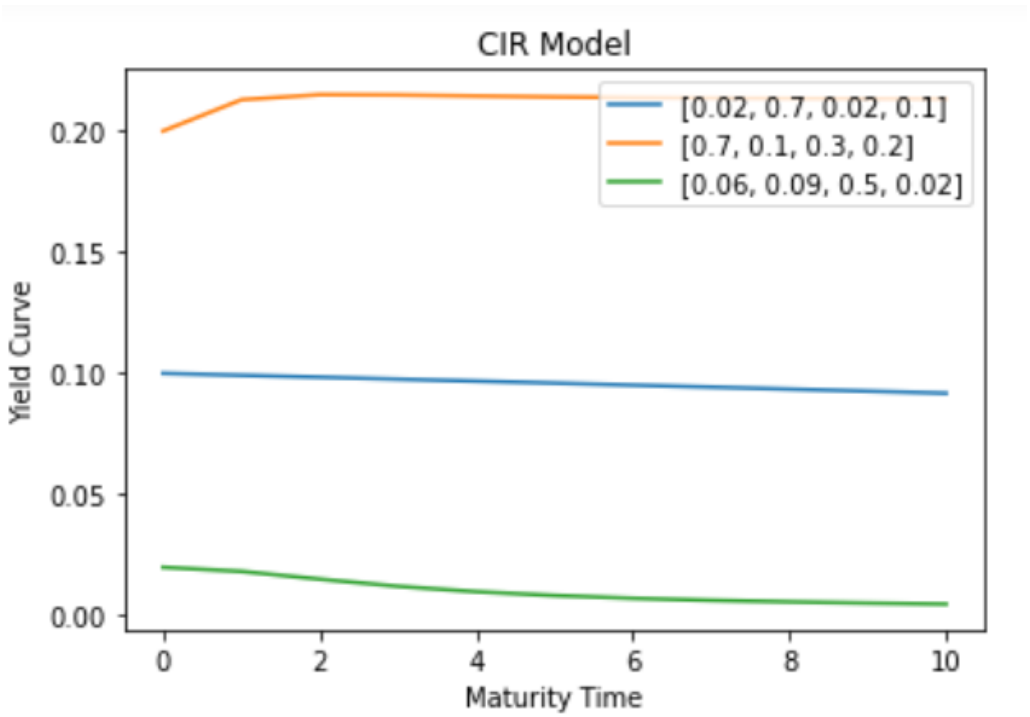



**Question 2:**

The CIR model is as follows:

$$dr = \beta(\mu - r)dt + \sigma\sqrt{r}dW^Q$$

Plot Yield vs Maturity Time for 3 parameter sets [0.02,0.7,0.02,0.1], [0.7,0.1,0.3,0.2], and [0.06,0.09,0.5,0.02]:



Now, 10 different values of r (from 0.1 to 1) were chosen. Then, the Yield Curve vs Maturity Time was plotted out for the parameter set [0.02,0.7,0.02, r] (with 600 units).