1. Consider the Vasicek model

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

For the three parameter sets $[\beta, \mu, \sigma, r(0)]$ given by $[5.9, 0.2, 0.3, 0.1], [3.9, 0.1, 0.3, 0.2]$ and $[0.1, 0.4, 0.11, 0.1]$, plot the term structure up to 10 time units (*i.e,* plot yield versus time). Now for each of the three parameter sets, plot yield curves versus maturity up to 500 time units for ten different values of $r(0)$.

2. Consider the CIR model

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

For the three parameter sets $[\beta, \mu, \sigma, r(0)]$ given by $[0.02, 0.7, 0.02, 0.1], [0.7, 0.1, 0.3, 0.2]$ and $[0.06, 0.09, 0.5, 0.02]$, plot the term structure up to 10 time units (*i.e,* plot yield versus time). For the parameter set $[\beta, \mu, \sigma]$ given by $[0.02, 0.7, 0.02]$ and with $r(0) = 0.1 : 0.1 : 1$, plot yield curves versus maturity for 600 time units.

Put down your observations in the report.