

## Further analysis IV

### Objective

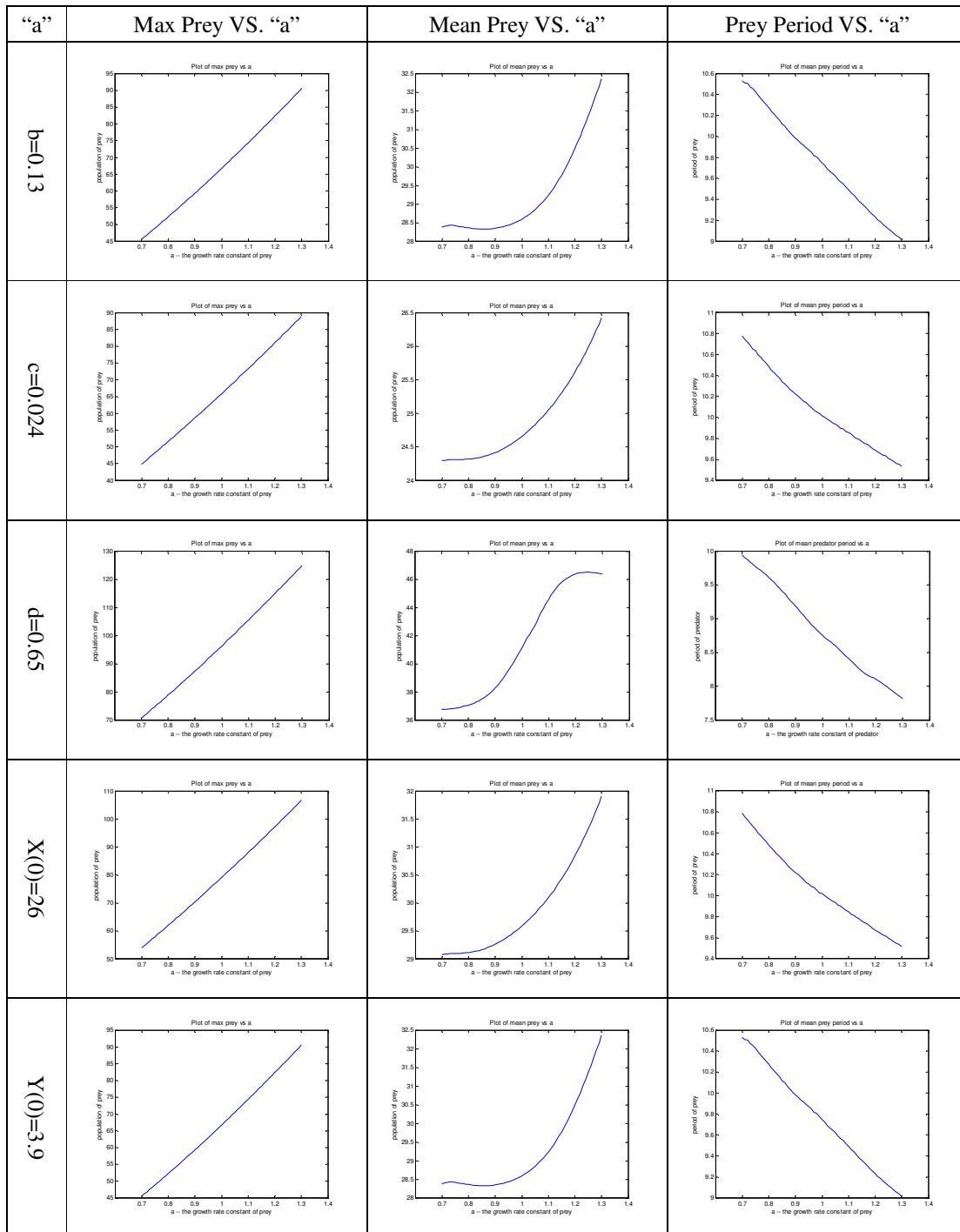
- Have a template to study the general local behaviours of a parameter.

$$dX/dt = aX - bXY \text{ -----(1)}$$

$$dY/dt = cXY - dY \text{ -----(2)}$$

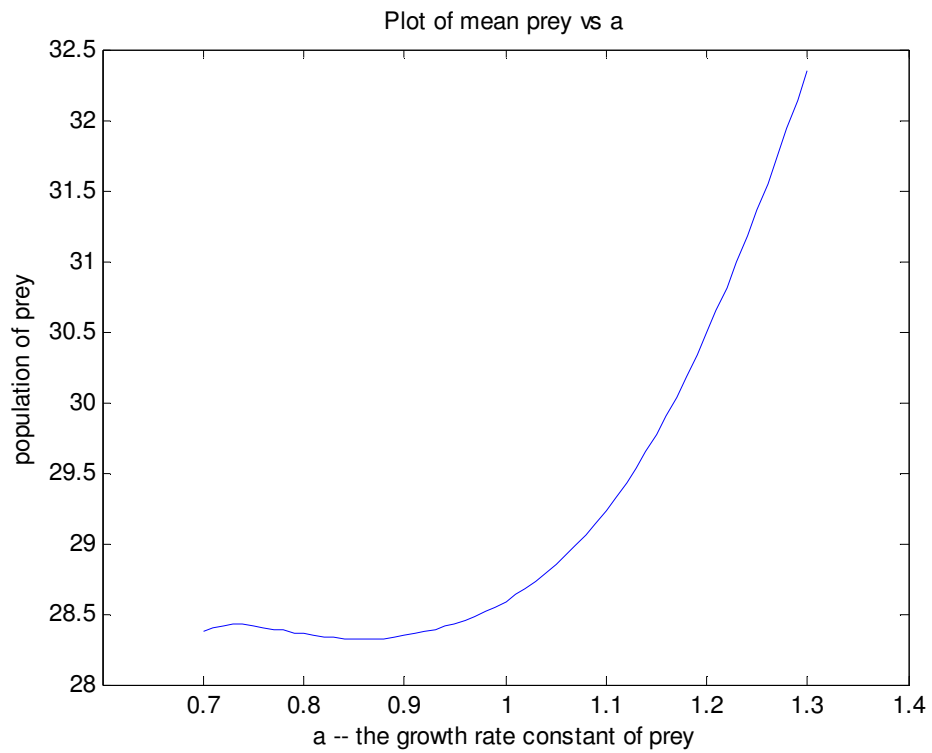
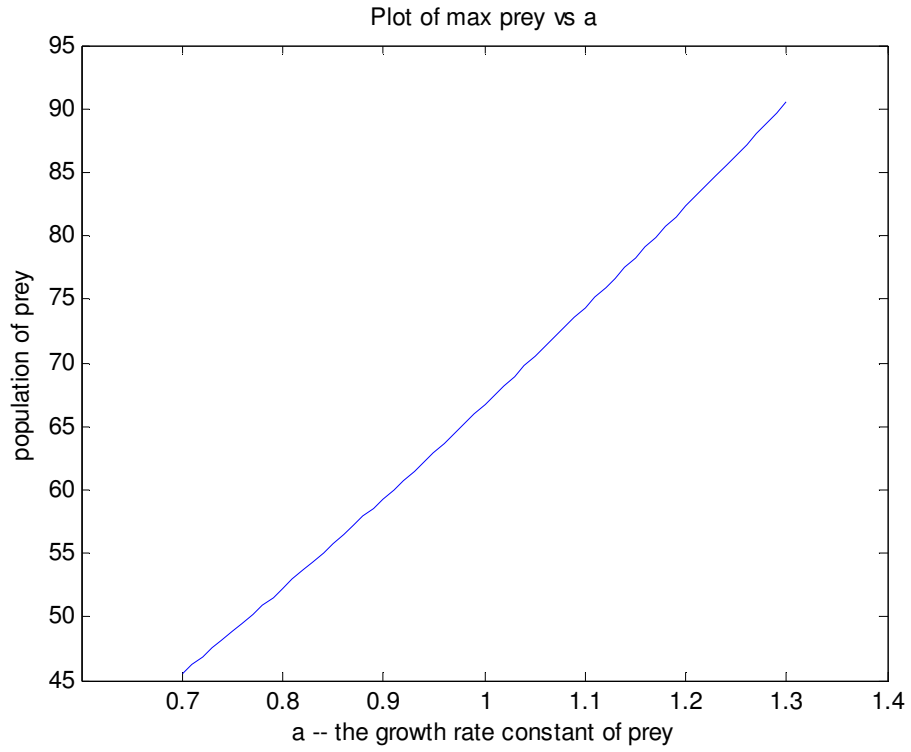
### Methods

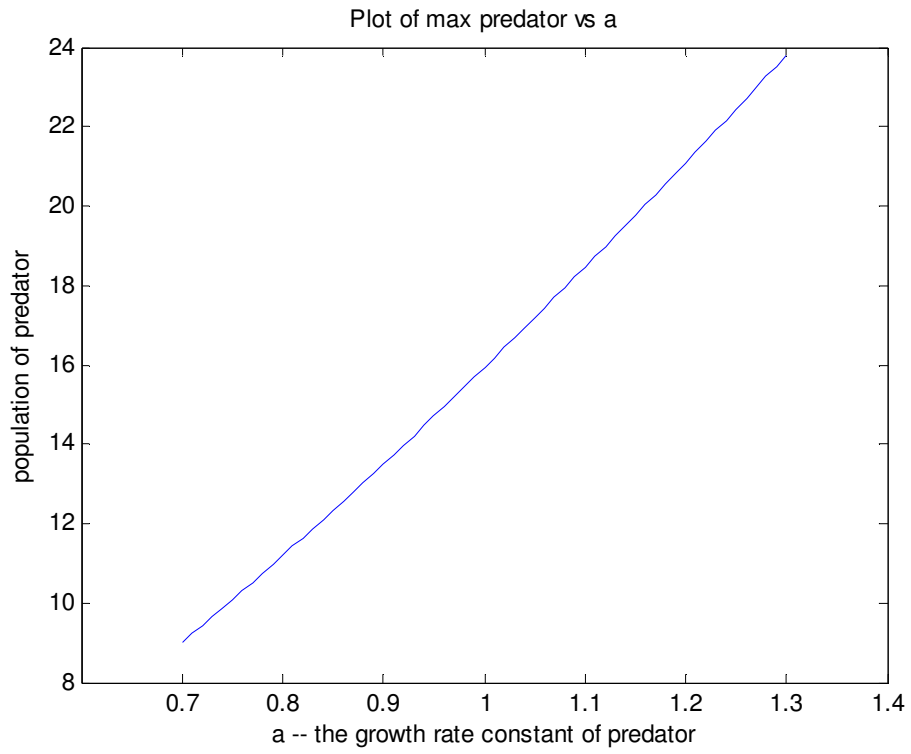
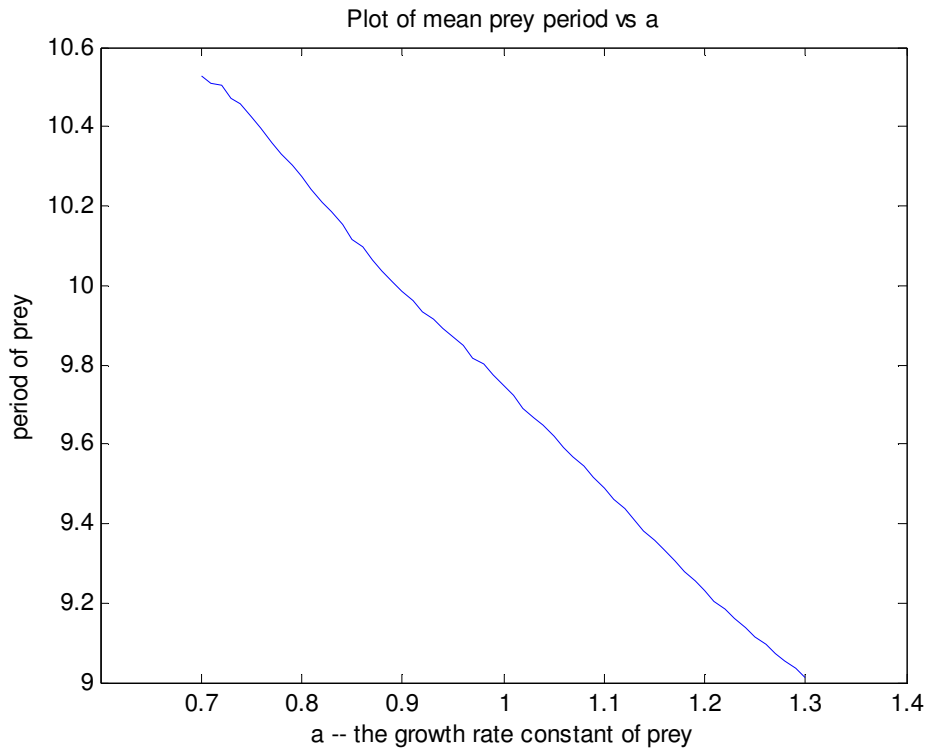
- Increasing “a” from 0.7 to 1.3, with condition  $b = 0.1$   $c = 0.02$   $d = 0.5$   $X(0) = 20$   $Y(0) = 3$ , unless otherwise stated.

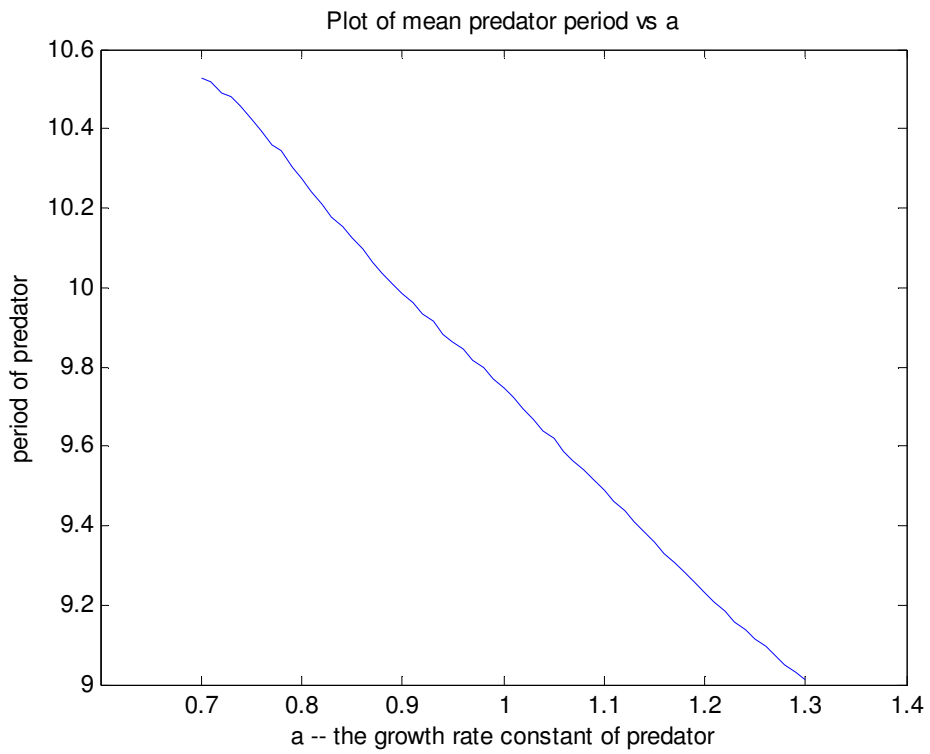
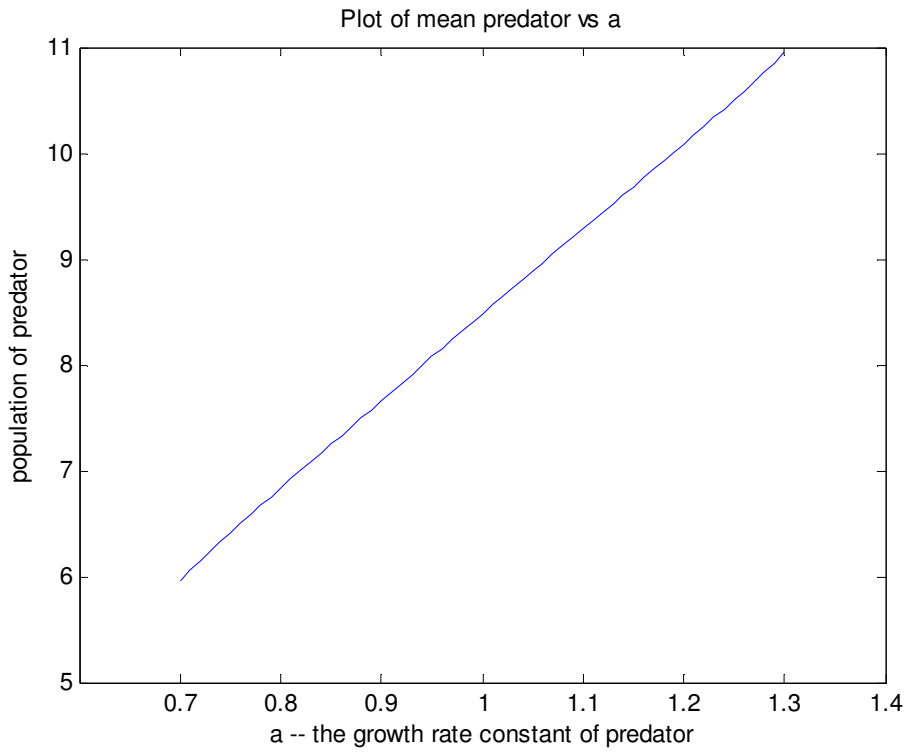


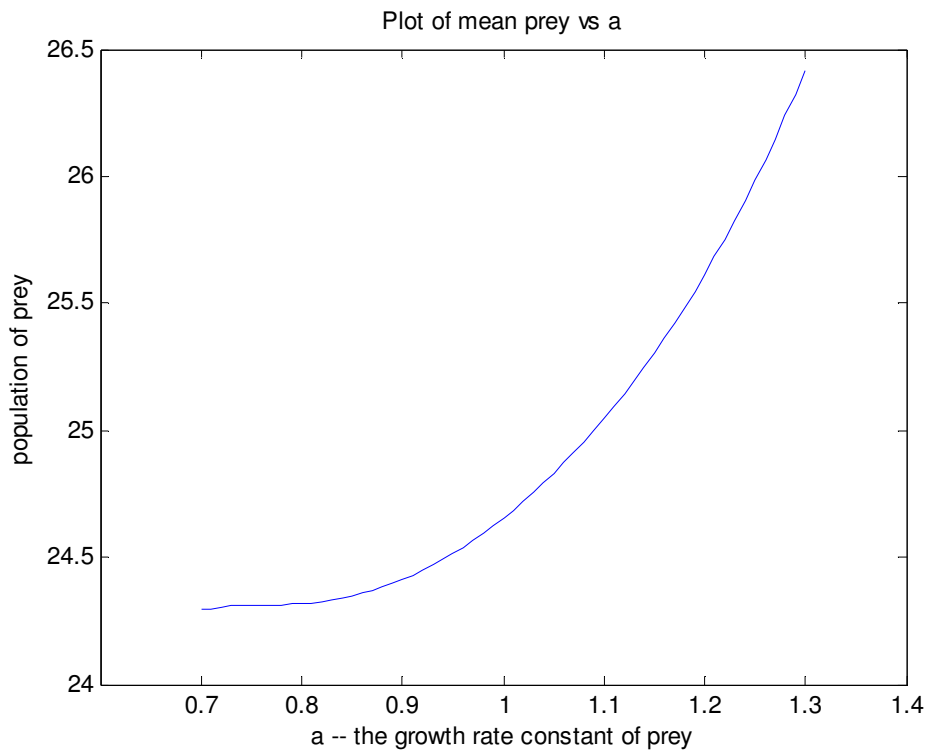
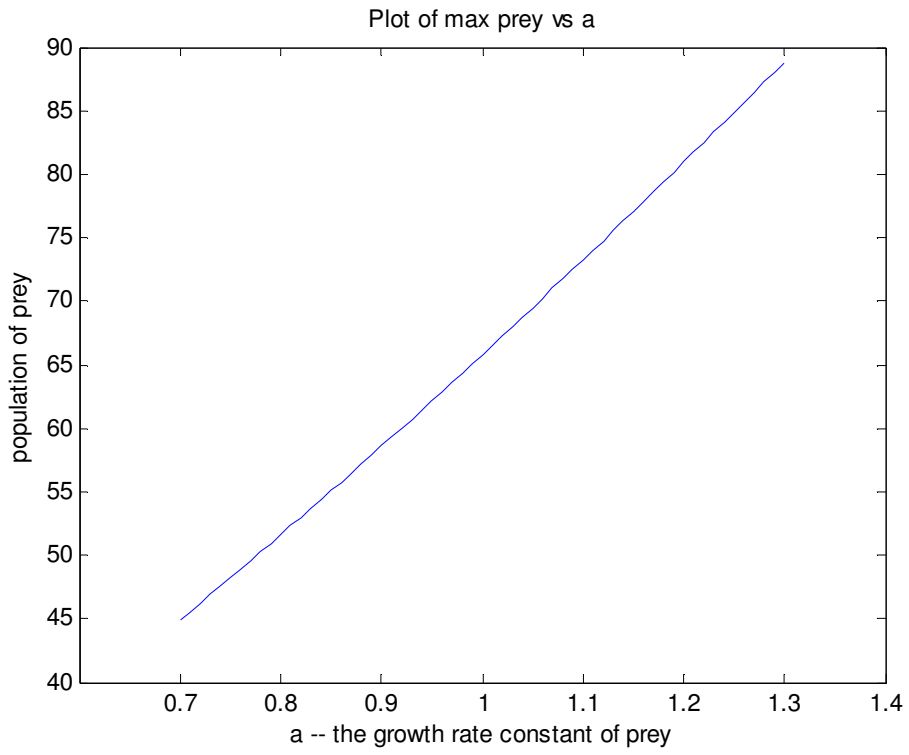
- Max prey graph is increasing, while the mean graph is a bit curvature. The period is generally decreasing.

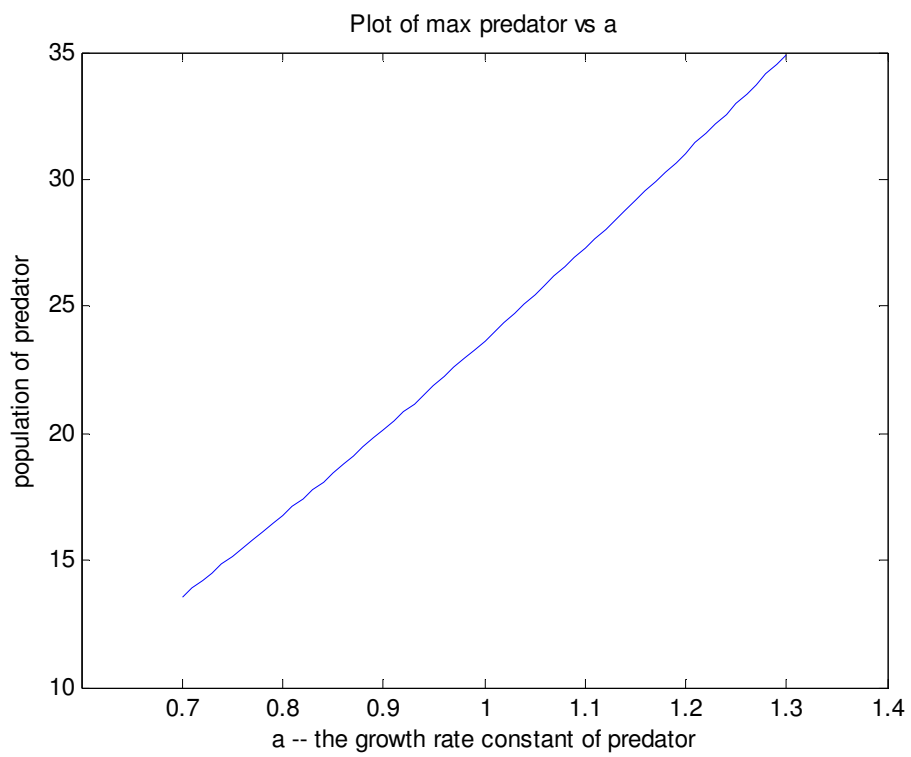
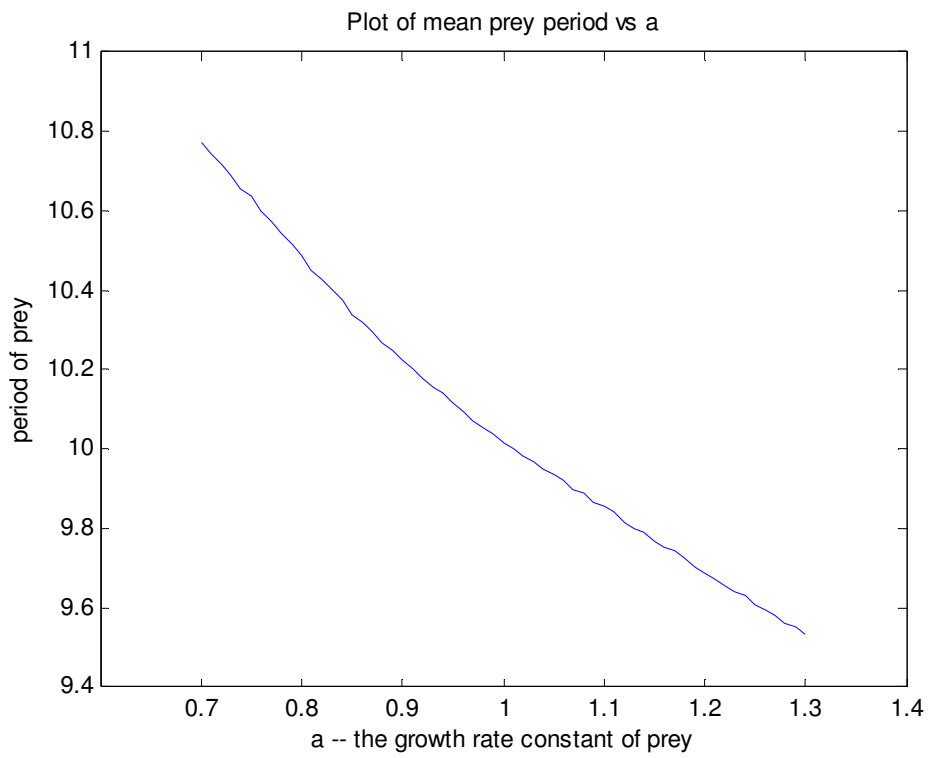
### Appendix for full size graphs

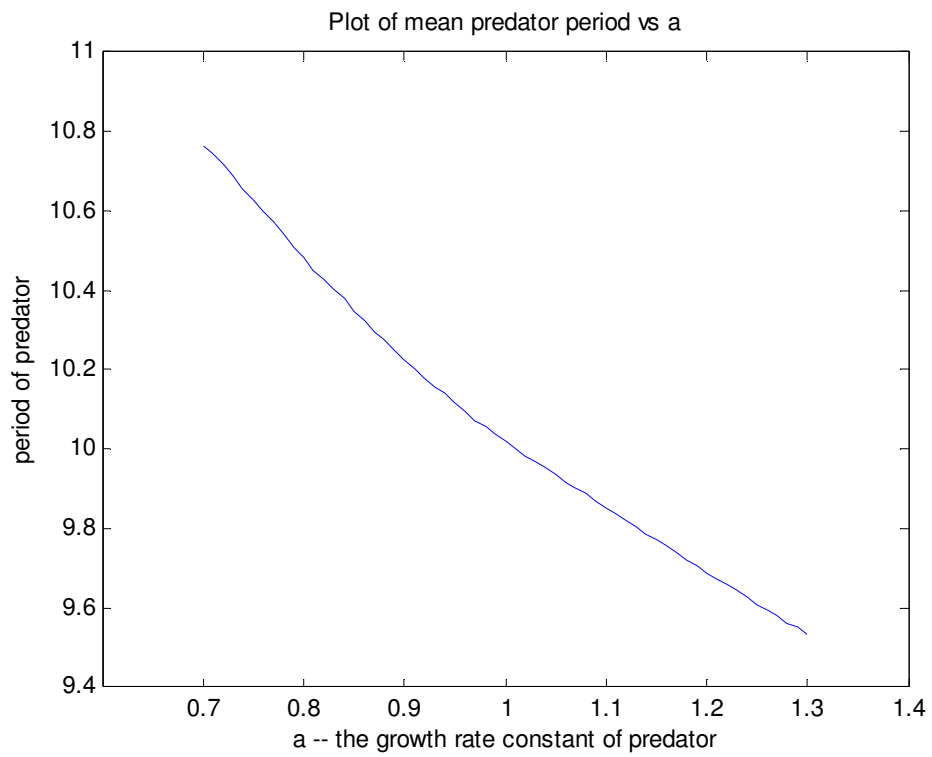
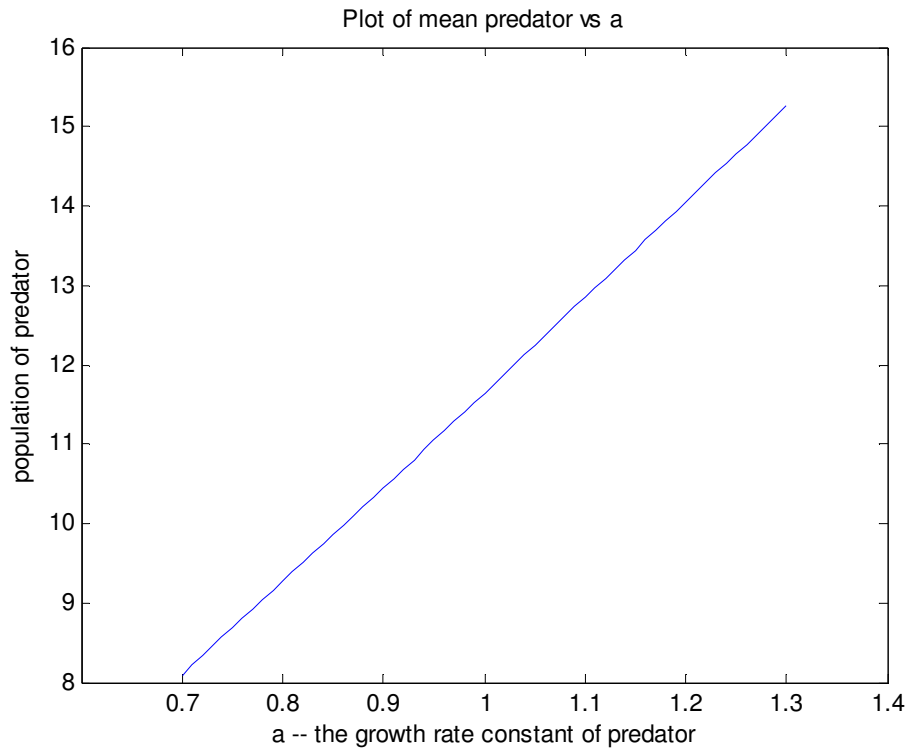




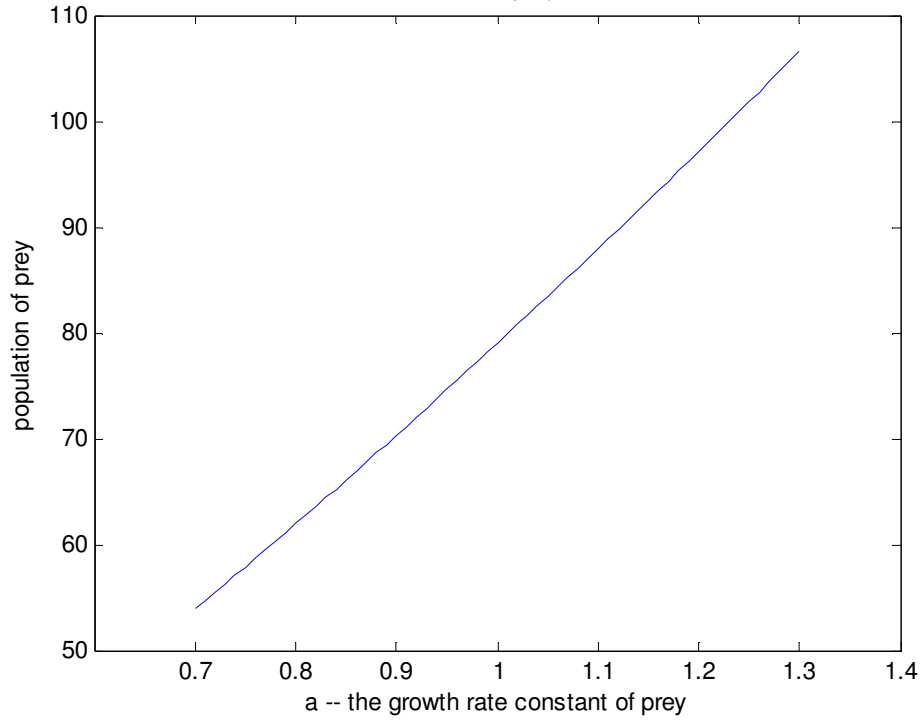




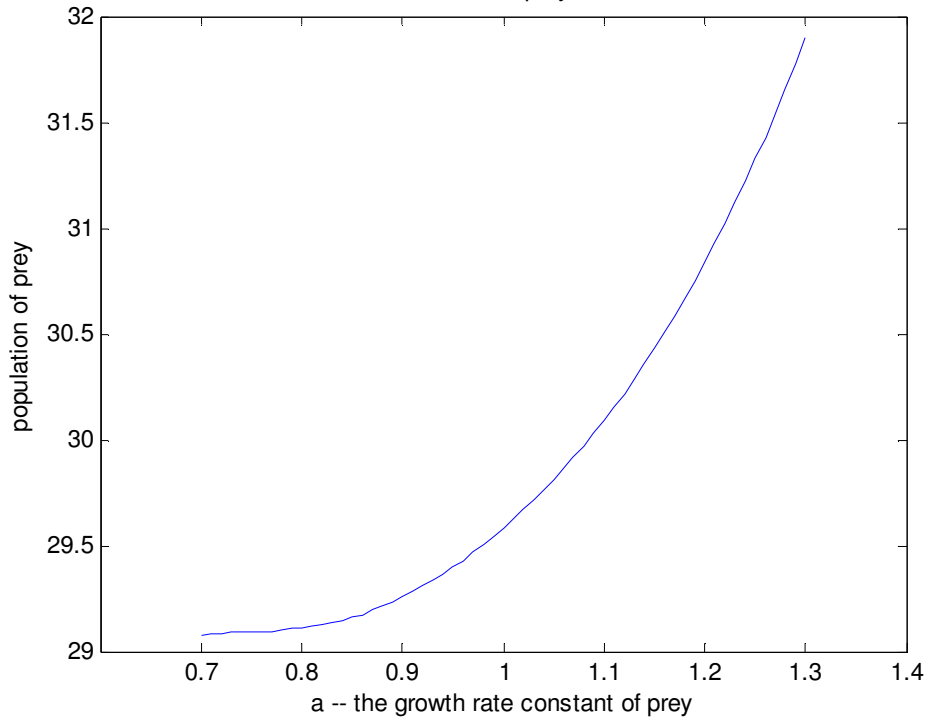




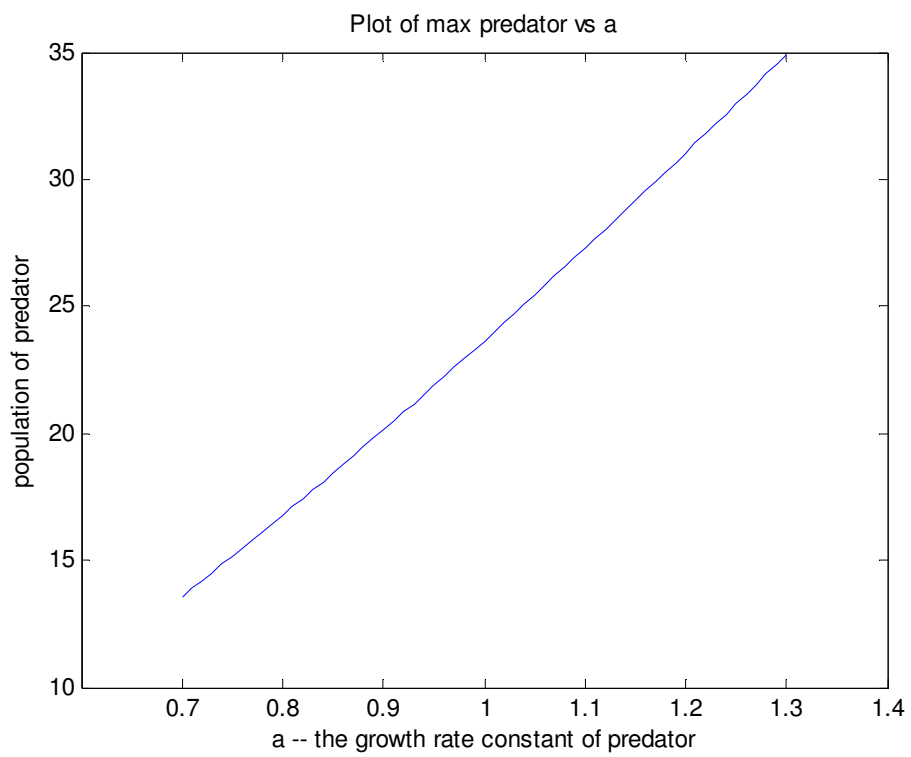
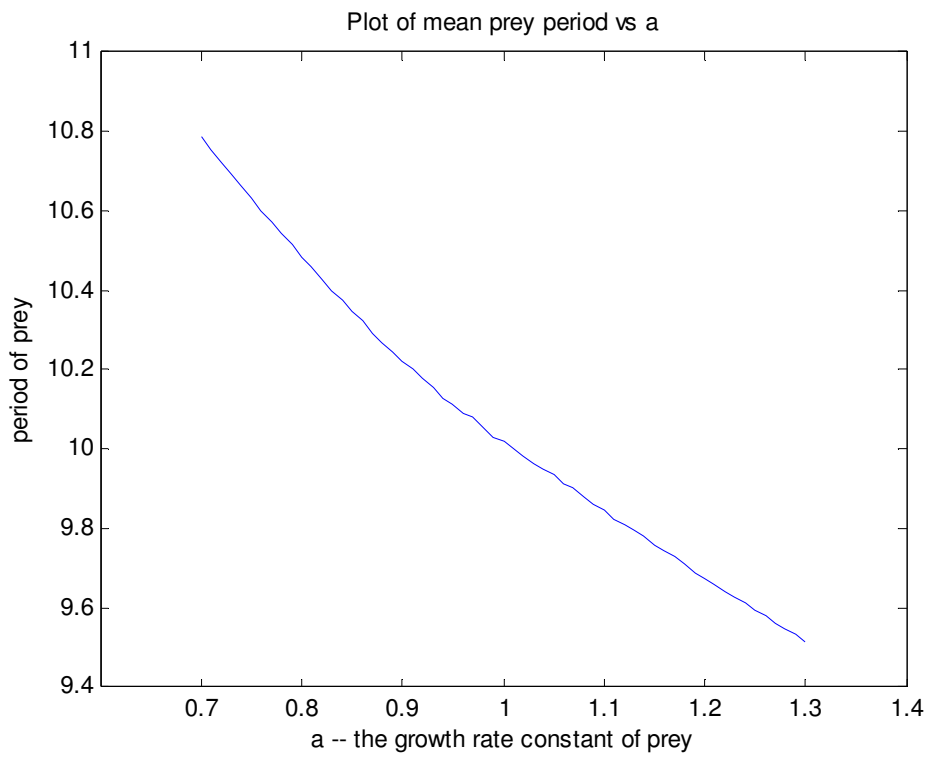
Plot of max prey vs a

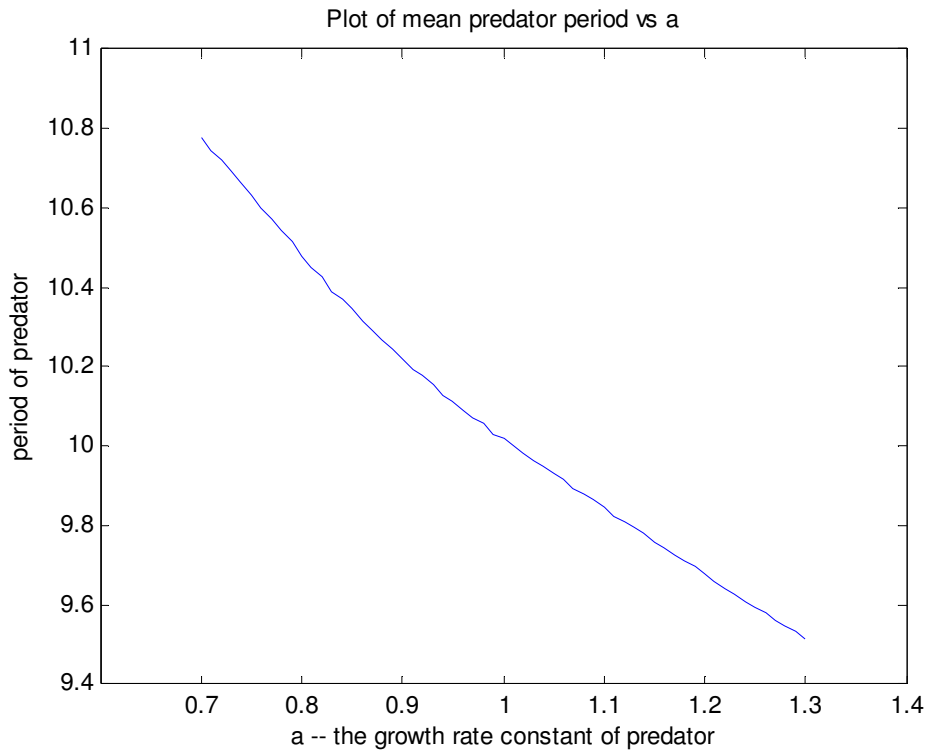
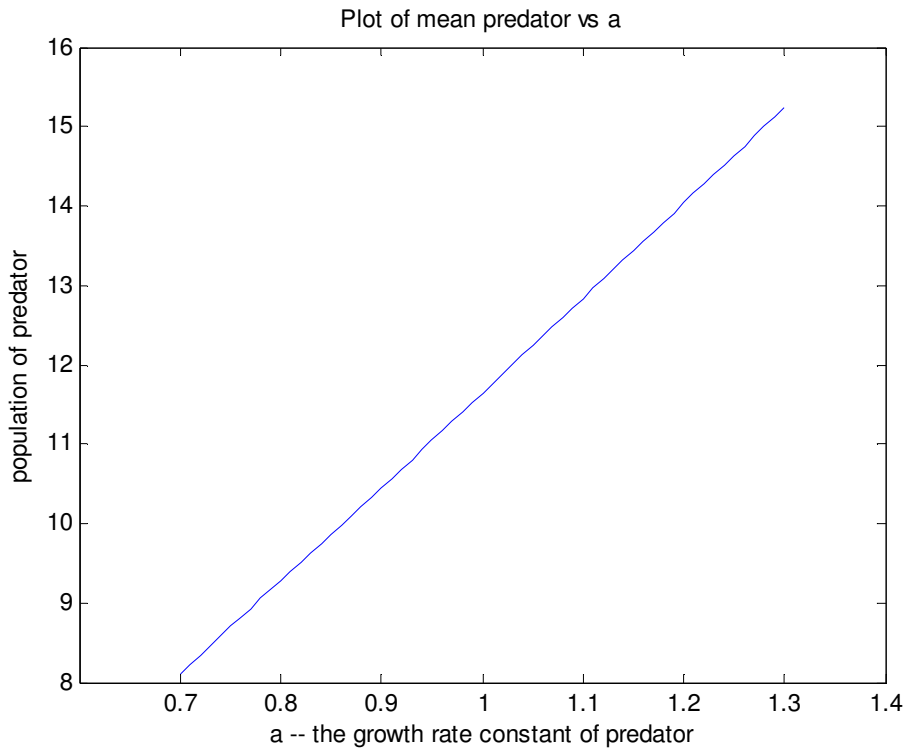


Plot of mean prey vs a

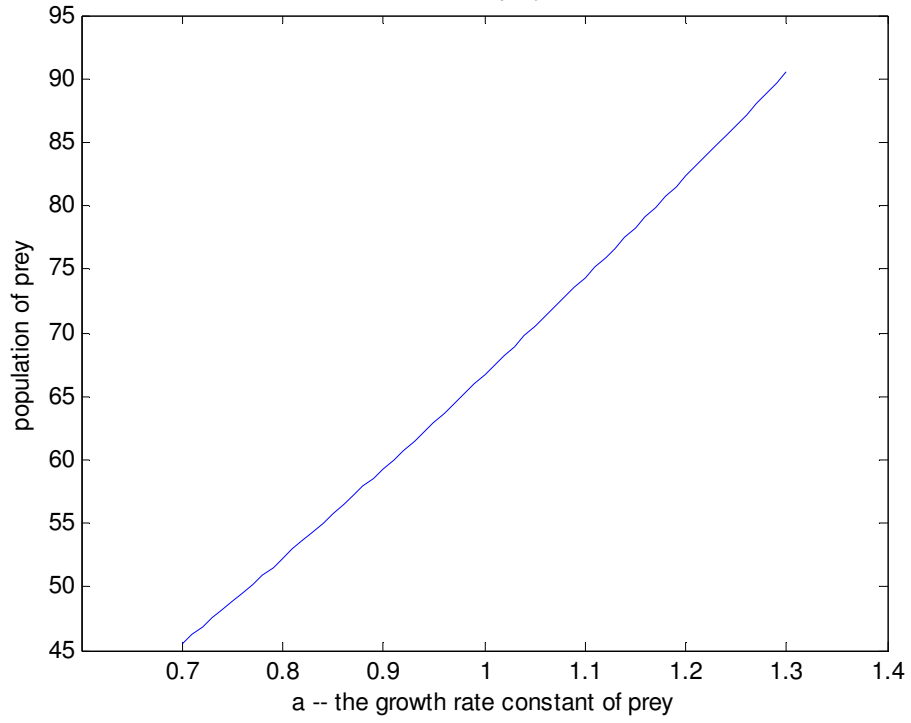




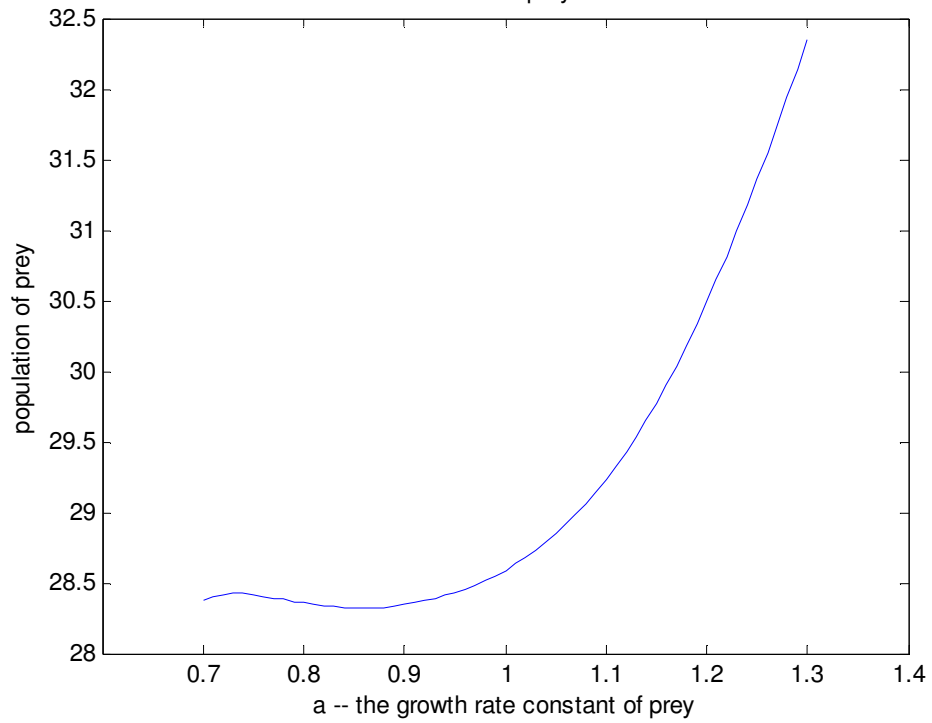


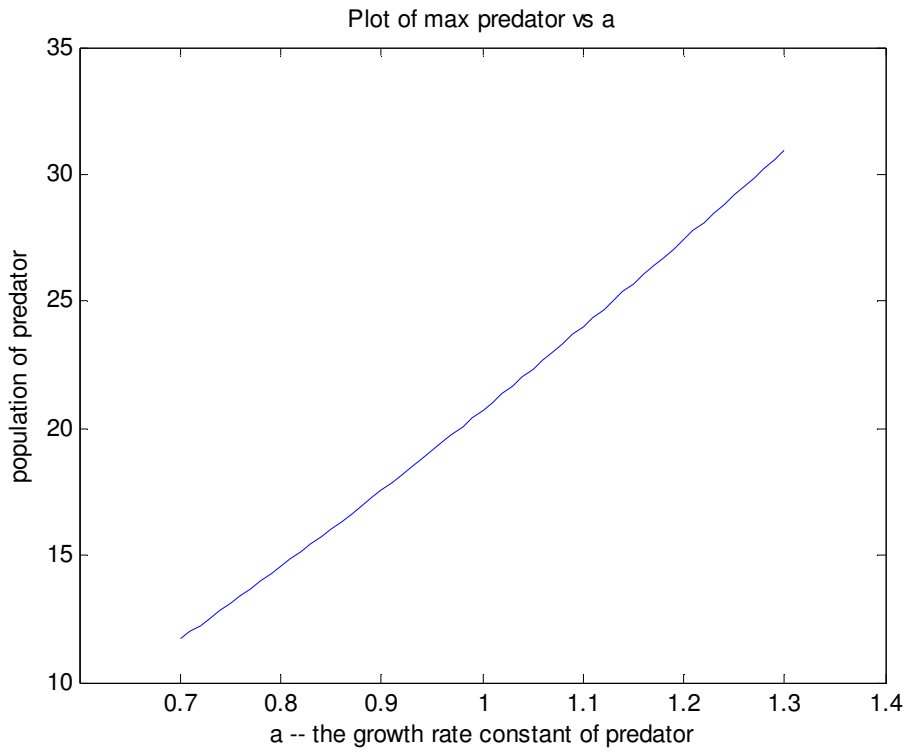
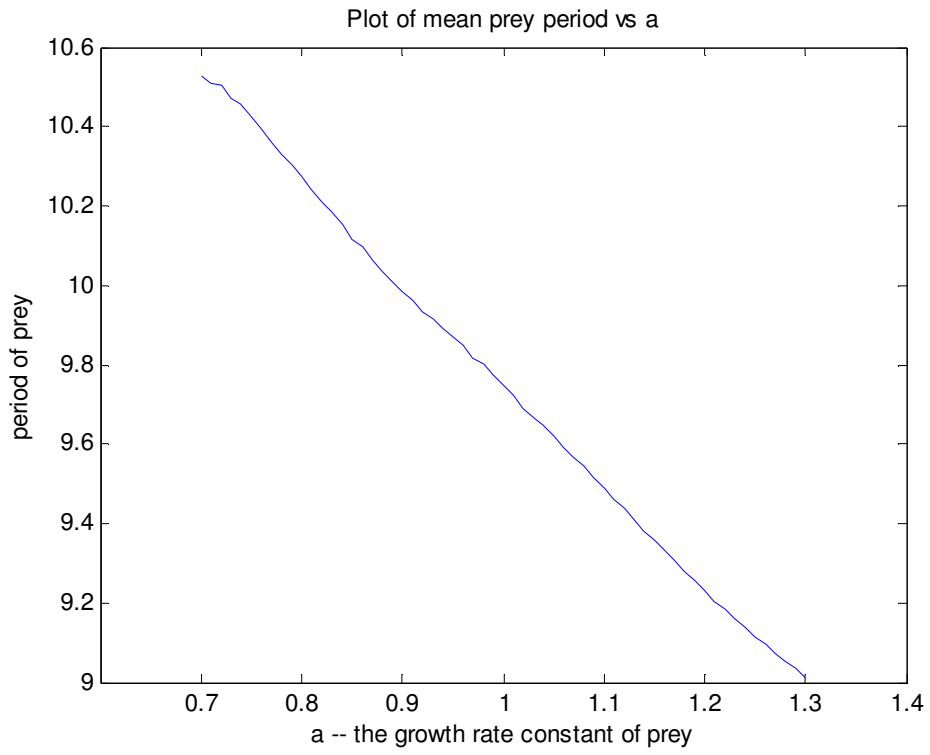


Plot of max prey vs a

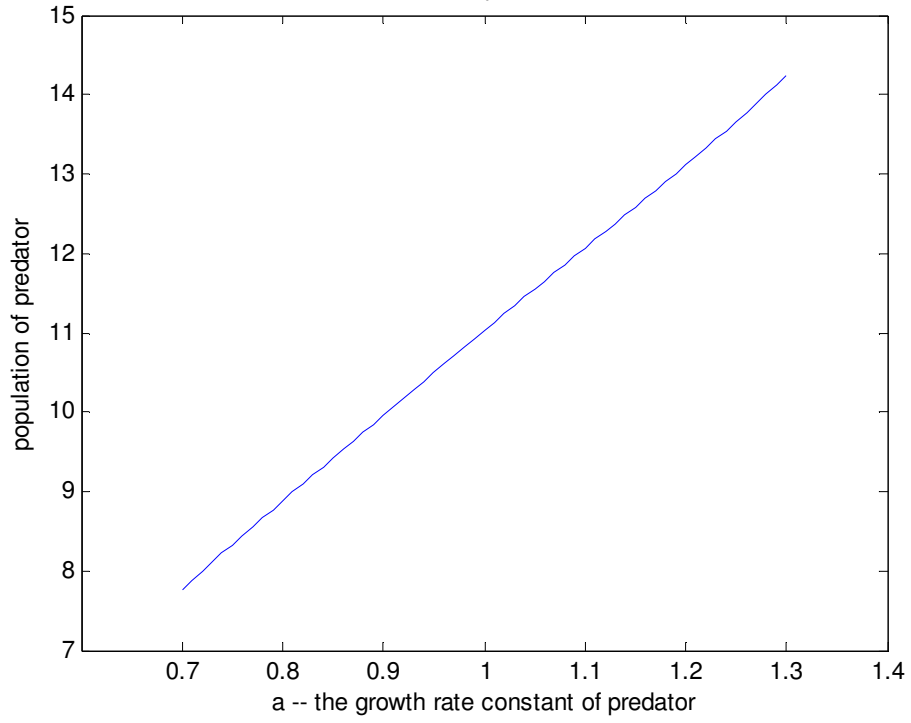


Plot of mean prey vs a





Plot of mean predator vs a



Plot of mean predator period vs a

