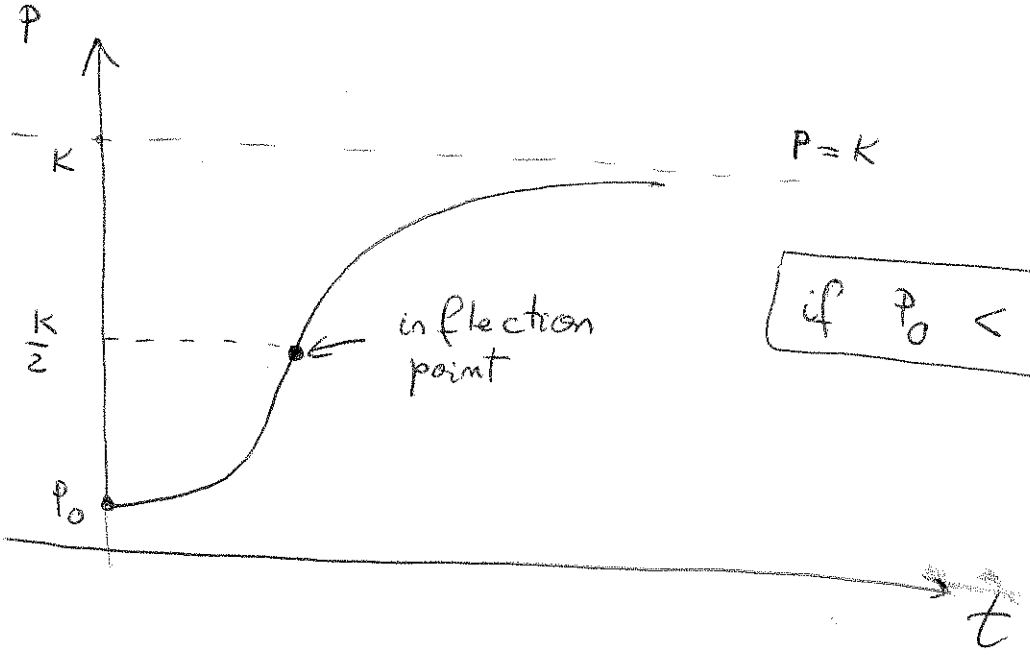
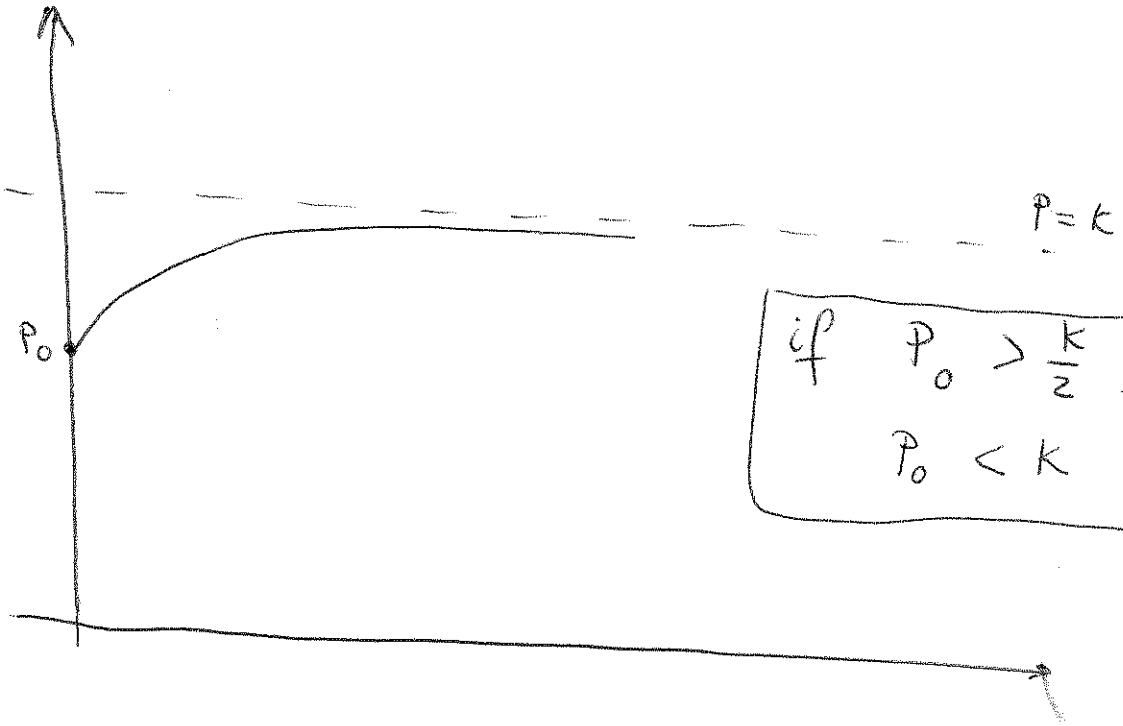
Graphs for the solution of logistic equation

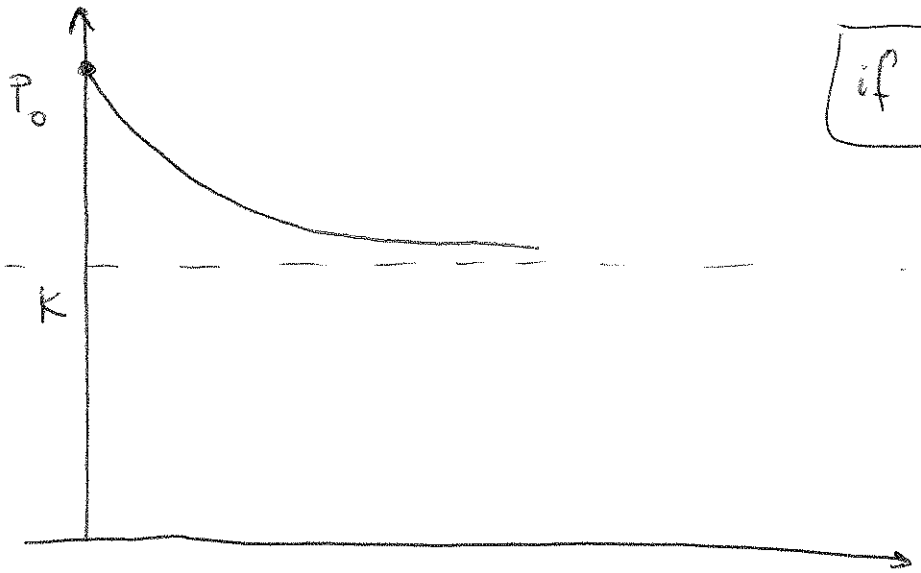
$$\frac{dP}{dt} = rP\left(1 - \frac{P}{K}\right)$$



if $P_0 < \frac{K}{2}$



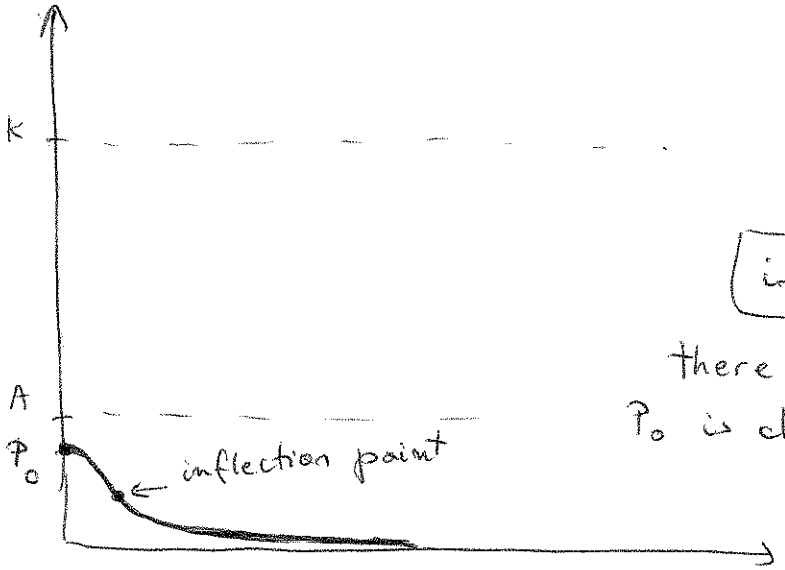
if $P_0 > \frac{K}{2}$, $P_0 < K$



if $P_0 > K$

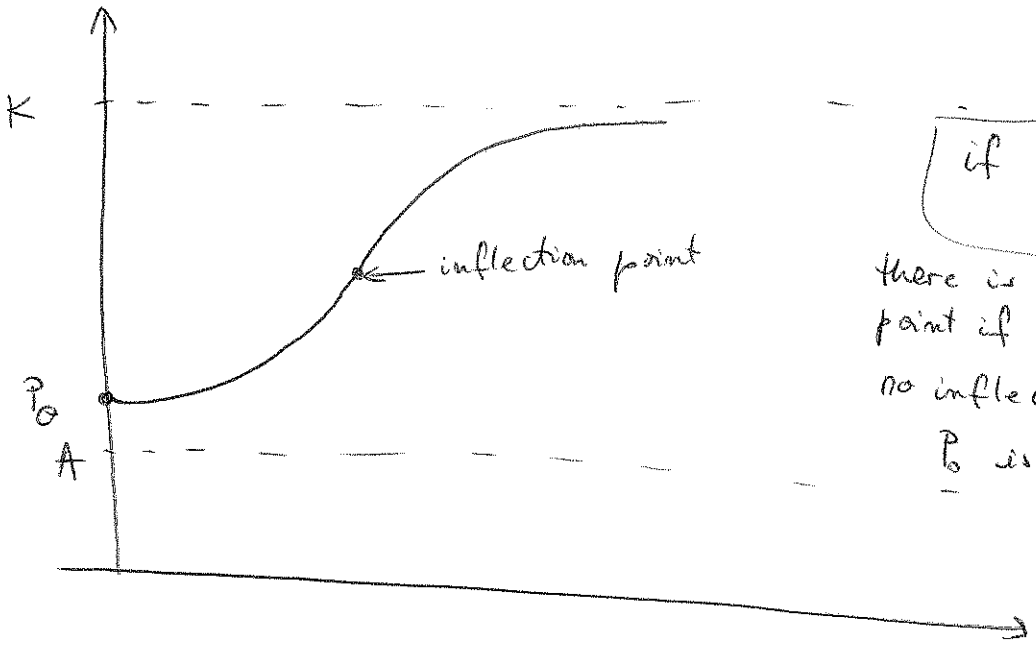
Graphs for the logistic equation with Allee effect

$$\frac{dP}{dt} = rP\left(1 - \frac{P}{K}\right)\left(\frac{P}{A} - 1\right) \qquad \text{(where } A < K\text{)}$$



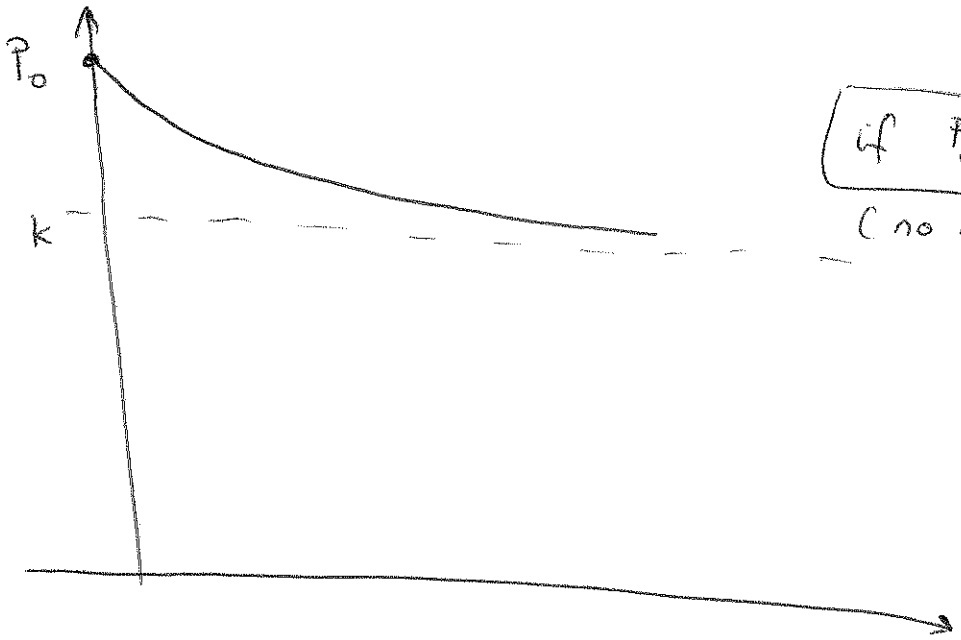
if $P_0 < A$

there is an inflection point if P_0 is close to A; no inflection point if P_0 is close to 0



if $P_0 > A$, $P_0 < K$

there is an inflection point if P_0 is close to A.
no inflection point if P_0 is close to K



if $P_0 < K$

(no inflection point)