Consider the model of tumor growth and therapy:

\[
\frac{dN}{dt} = \bar{k}N(1 - \frac{N}{N_\infty}) - \mu AN
\]

\[
\frac{dA}{dt} = a(t) - \lambda A - \gamma AN
\]

where \(N\) is the number of tumor cells/unit volume and \(A\) is the drug concentration. Let the parameters \(N_\infty = \bar{k} = \mu = \lambda = \gamma = 1\), \(\frac{1}{2}\) and \(a(t) = a_\infty\).

(a). Nondimensionalizing time by \(\bar{k}\), \(N\) by \(N_\infty\) and \(A\) by \(a_\infty / \bar{k}\), find the nondimensional parameters governing the system and their values for this specific case.

(a). Find the equilibrium solution(s) as a function of the infusion rate \(a_\infty\).

(b). Under what conditions are these solutions stable?

(c). Extra credit: Solve the system numerically starting from the initial condition \(A(0)=0\), \(N(0)=0.1\). Take an appropriate \(a_\infty\).