Problem 1.7–20. Do not do the problem as stated in the textbook. Modify it as follows. Use the parameter values \( k = 0.3, N = 2500 \), so that the differential equation becomes

\[
\frac{dP}{dt} = 0.3P \left( 1 - \frac{P}{2500} \right) - C,
\]

where \( P = P(t) \) is the fish population in a lake at time \( t \) years and \( C \) is the annual fishing rate.

a. Suppose the average catch of a fisherman/woman with a license is 3 fish per year. What is the largest number of licenses that can be issued if the fish are to have a chance of surviving in the lake? (Note: The number of fishing licenses must be a whole number.)

b. Now suppose the number of fishing licenses in part a is issued. What happens to the fish population? In particular, how does the behavior of the population depend on the initial population?