PROBLEM SET 22: MODELS FOR POPULATION GROWTH

Note: Most of the problems were taken from the textbook [1].

Problem 1. *A population grows according to the given logistic equation, where t is measured in weeks:*

$$\frac{dP}{dt} = 0.02P - 0.0004P^2, \quad P(0) = 40.$$

(1) What is the carrying capacity? What is the value of k?
(2) Write the solution of the equation.
(3) What is the population after 10 weeks?

References

[1] J. Stewart: *Single Variable Calculus* 8th Edition, Cengage Learning, Boston 2015.