The logistic differential equation, \( \frac{dP}{dt} = kP \left( 1 - \frac{P}{L} \right) \) has, as you know, the solution

\[
P = \frac{L}{1 + Ae^{-kt}}, \quad \text{where} \quad A = \frac{L - P_0}{P_0}
\]

where \( P_0 \) is the initial population.

Solve the differential equation \( \frac{dP}{dt} = P(1 - P) \) either by using the above formula or by solving this separable equation by using integration by partial fractions.