[mex107] Continuous logistic model

Consider the continuous logistic model in population dynamics,

$$\frac{dN}{dt} = rN\left(1 - \frac{N}{K}\right),$$

where the variable $N(t)$ represents the instantaneous size of some population, the parameter r is the per-capita growth rate and the parameter K the carrying capacity due to limited living space and resources.
(a) Find the solution for initial condition $N(0)$.
(b) Find the value of N (for given $N(0), r, K$) at which the population grows most rapidly.

Solution: