A hard-boiled egg is removed from a pot of hot water and set on the table to cool. Let the temperature of the body at time $t$ be $T(t).$ Assume the change of the temperature of the body satisfies Newton’s law of cooling: $\frac{dT}{dt}=µ\left(T-T\_{α}\right),$ where $T\_{α}=20˚C$ and µ is a constant.

1. Initially, the egg’s temperature is $90˚C$. After an hour its temperature is $60˚C$. Solve the differential equation and hence determine the function $T$ in terms of $t$.
2. When will the egg’s temperature be $50˚C$?