Newton says

$$\frac{dT}{dt} = -k(T-A)$$

k = constant measuring rate at which heat is conducted to/from the object. Depends on physical composition of the object. k is always positive

This is a differential equation because it involves the derivative $\frac{dT}{dt}$.

We want to know more explicitly what T is as a function of t. In fact

$$T(t) = Ce^{-kt} + A$$

solves the Differential equation, where C is any number.

It's easy to check. Let $T(t) = Ce^{-kt} + A$

$$LHS = \frac{dT}{dt} = \frac{d}{dt}\left(Ce^{-kt}\right) + \frac{d}{dt}(A) = C\frac{d}{dt}\left(e^{-kt}\right) + 0$$

$$= C(-k)e^{-kt}$$ ← equal!

$$RHS = -k(T-A) = -k\left(Ce^{-kt} + A - A\right) = -kCe^{-kt}$$