Ejercicio 29 – Base Marambio

$$\frac{dT}{dt} = -4 - 0,55.T \; ; \qquad T(t_0 = 0) = 25$$

$$u = 4 + 0,55.T \; ; \quad du = 0,55.dT \quad \Rightarrow \quad dT = \frac{du}{0,55}$$

$$\int_{T_0}^{T} \frac{dT}{(-4 - 0,55.T)} = \int_{t_0}^{t} dt$$

$$\frac{1}{0,55} \int_{u_0}^{u} \frac{du}{(-u)} \; ; \quad \left(-\frac{1}{0,55} \right) \ln(u) \bigg|_{u_0}^{u}$$

$$\left(-\frac{1}{0,55} \right) \ln\left(4 + 0,55.T \right) \bigg|_{T_0}^{T} = t - t_o$$

$$\ln\left(\frac{4 + 0,55.T}{4 + 0,55.25} \right) = -0,55.t$$

$$\frac{4 + 0,55.T}{17,75} = e^{-0,55.t}$$

$$T(t) = \frac{17,75. \, e^{-0,55.t} - 4}{0,55}$$

$$T(\infty) = -7,27°C$$