*1.4. Consider a radioactive decay problem involving two types of nuclei, A and B, with populations $N_A(t)$ and $N_B(t)$. Suppose that type A nuclei decay to form type B nuclei, which then also decay, according to the differential equations

$$\begin{aligned} \frac{dN_A}{dt} &= -\frac{N_A}{\tau_A}, \\ \frac{dN_B}{dt} &= \frac{N_A}{\tau_A} - \frac{N_B}{\tau_B}, \end{aligned} \tag{1.11}$$

where τ_A and τ_B are the decay time constants for each type of nucleus. Use the Euler method to solve these coupled equations for N_A and N_B as functions of time. This problem can also be solved exactly, as was the case with our original nuclear decay problem (1.1). Obtain the analytic solutions for $N_A(t)$ and $N_B(t)$, and compare them with your numerical results. It is also interesting to explore the behavior found for different values of the ratio τ_A/τ_B. In particular, try to interpret the short and long time behaviors for different values of this ratio.