

87. Since R is proportional to N (see Eq. 43-16) then $N/N_0 = R/R_0$. Combining Eq. 43-13 and Eq.43-17 leads to

$$t = -\frac{T_{1/2}}{\ln 2} \ln\left(\frac{R}{R_0}\right) = -\frac{5730 \text{ y}}{\ln 2} \ln(0.020) = 3.2 \times 10^4 \text{ y} .$$