

Given that Thulium-167 has a radioactive half-life of approximately 9 days, determine a so that $A(t) = A_0 a^t$ describes the amount of Thulium-167 left after t days.

$$A(t) = A_0 a^t,$$

$$A(9) = A_0 a^9 = \frac{A_0}{2},$$

$$a^9 = \frac{1}{2}, \quad 9 \ln a = -\ln 2$$

$$\ln a = \frac{-\ln 2}{9} \quad \text{So}$$

$$a = e^{\frac{-\ln 2}{9}}.$$