Half life decay $y = A\,2^{-\lambda t}$

(half life, time, amount left, initial quantity)

$$\frac{dy}{dt} = A\lambda \log_e(2)\left(-2^{-\lambda t}\right) \quad (1)$$

$\frac{dy}{dt}$ is the rate of material loss. At equilibrium we must have

$$\frac{dy}{dt} = R \quad (2)$$

where R is the rate of material being added.

$$R = A\lambda \log_e(2)\left(-2^{-\lambda t}\right) \quad (3)$$

$$\frac{R}{\lambda \log_e(2)\left(-2^{-\lambda t}\right)} = A \quad (4)$$

Assuming we have quantity A at $t = 0$

$$\frac{R}{\lambda \log_e(2)} = A \quad (5)$$