(2.9) How many ideal stages in an ordinary cascade are required at an $\alpha = 6$ to produce water in which 10% of the hydrogen is deuterium?

The following data are given:

$$\alpha := 6 \qquad x_p := \frac{10}{100}$$

From data in Table 2.1 we also know that:

$$x_f := \frac{0.0155}{100}$$

Apply eqn. (2.50) to calculate the minimum number of stages needed:

$$Np := \frac{ln\left[\dfrac{x_p \cdot \left(1 - x_f\right)}{x_f \left(1 - x_p\right)}\right]}{ln(\alpha)} \qquad\qquad Np = 3.669 \qquad \text{stages, but } Np \text{ must be integer, hence: } Np = 4$$