

Exercises 2.2 - Some tips

2.2
#2 Find r such that $\left| \frac{n(r) - \frac{72}{100r}}{n(r)} \right| \leq 0.02$
where $n(r) = \frac{\ln 2}{(1+r)}$.

2.2
#3 Separate variables; employ partial fractions, integrate

$$\int \frac{dx}{x} - \int \frac{-\frac{1}{M} dx}{(1 - \frac{x}{M})} = \int k dt$$

$$\ln \left(\frac{x}{1 - \frac{x}{M}} \right) = kt + c$$

Exponentiate

$$(*) \quad \frac{x}{(1 - \frac{x}{M})} = e^{kt+c} = e^{kt} \cdot e^c$$

Apply initial condition $x(0) = x_0$

$$e^c = \frac{x_0}{(1 - \frac{x_0}{M})}$$

Replace e^c in (*) and "simplify."

2.2
#6, #7 See sample spreadsheet