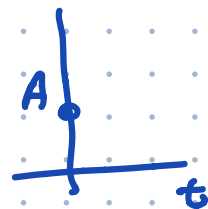


Doubling time and half-life

At time $t=0$ $y = Ab^t = Ab^{0} = A$



when doubled

$$y = 2A = Ab^t$$

$$2 = b^t$$

$\frac{1}{2}A$

$$\log 2 = \log b^t$$

$$\log 2 = t \log b$$

$$t = \frac{\log 2}{\log b} \quad \text{doubling time!}$$

$$\text{eg } 10\% \text{ growth} \Rightarrow b = 1.1 \Rightarrow t = \frac{\log 2}{\log 1.1} \approx 7.27$$

$$1\% \text{ growth} \Rightarrow b = 1.01 \Rightarrow t = \frac{\log 2}{\log 1.01} \approx 69.66$$

$$t = - \frac{\log 2}{\log b} \quad \text{halving time!}$$