Econ 422 Lec 2

Note Title 10/5/2009

$$R_t = \frac{P_t - P_{t-1}}{P_{t-1}} = \text{nominal return}$$

$$R_t^{Real} = \frac{1+R_t}{1+\pi} - 1 \quad , \quad \pi_t = \%\Delta CPI_t$$

$$\Rightarrow \underbrace{(1+R^{Real})}_{\text{gross real return}} \underbrace{(1+\pi)}_{\text{gross inflation}} = \underbrace{1+R_t}_{\text{gross nominal return}}$$

2-yr investment : $R_t(24) = \dfrac{P_t - P_{t-12}}{P_{t-24}}$

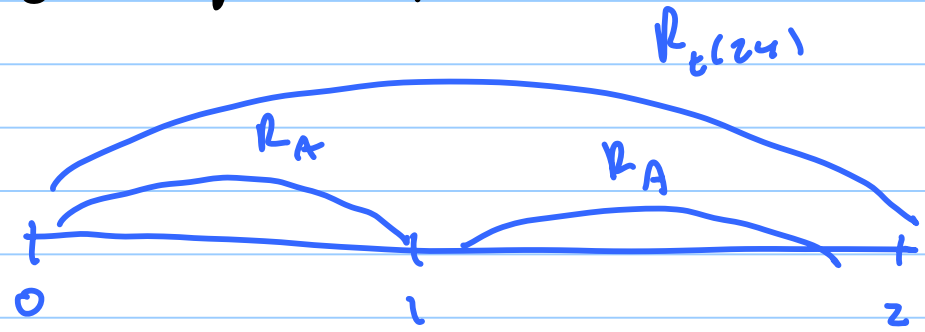
Solve

$$(1 + R_A)^2 = 1 + R_t(24)$$

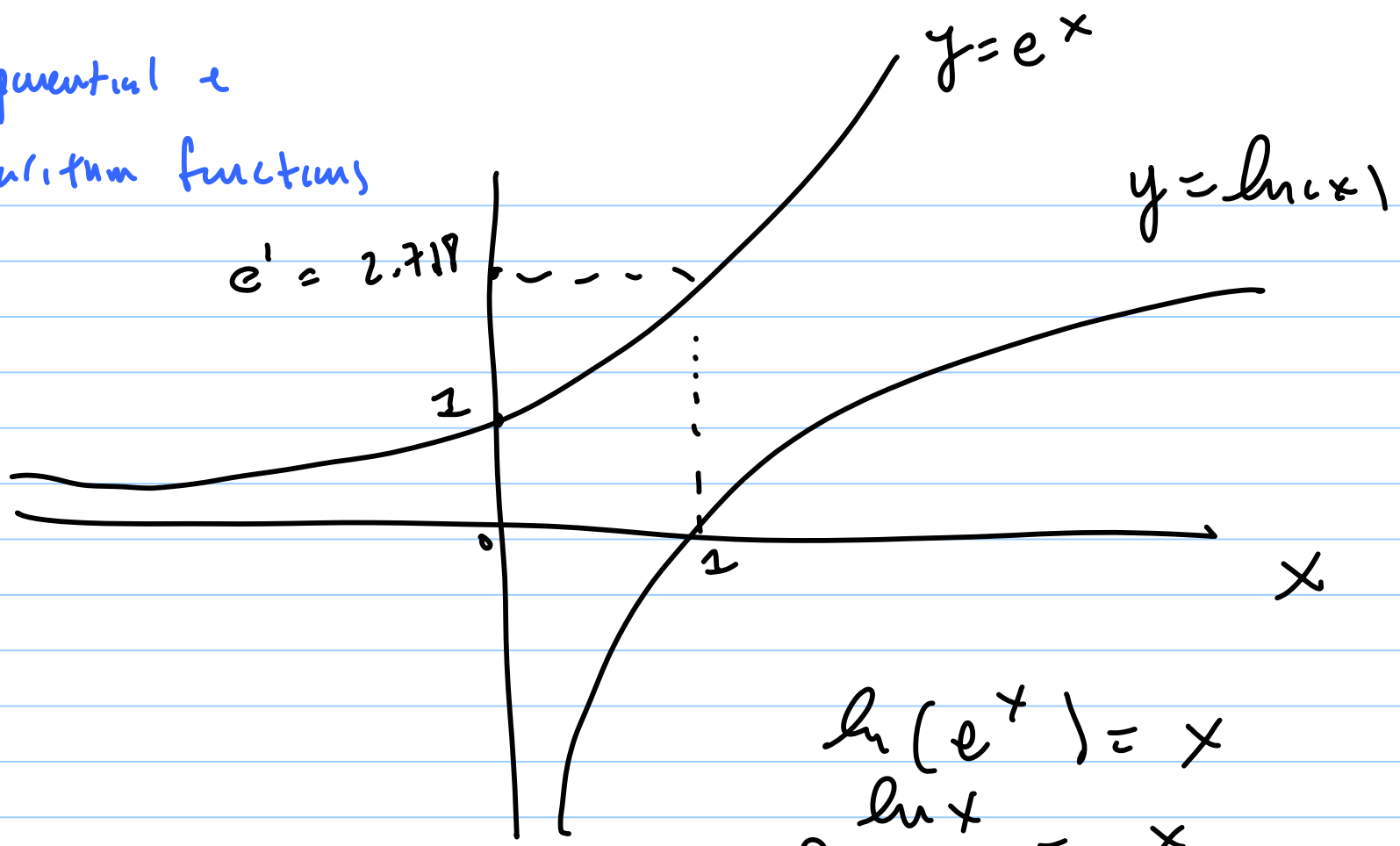
$$\Rightarrow 1 + R_A = (1 + R_t(24))^{1/2}$$

$$\Rightarrow R_A = (1 + R_t(24))^{1/2} - 1$$

↑ annual return



Exponential & logarithm functions



$\ln(e^x) = x$

$e^{\ln x} = x$

$$r_t \overset{def}{=} \ln(1 + R_t)$$

$$e^{r_t} = 1 + R_t = \frac{P_t}{P_{t-1}}$$

$$\Rightarrow \quad P_t = P_{t-1} \cdot e^{r_t}$$

Rule of 70 $\quad n = \dfrac{\ln(2)}{\ln(1+R)} \simeq \dfrac{0.7}{R}$

First order Taylor Series expansion

$$f(x) = f(x_0) + \frac{d}{dx} f(x_0)(x - x_0) + \text{Remainder}$$