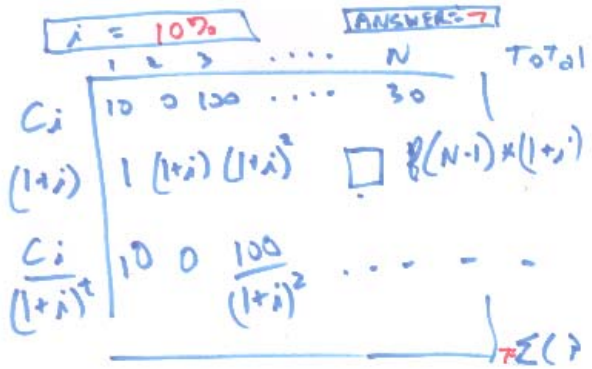
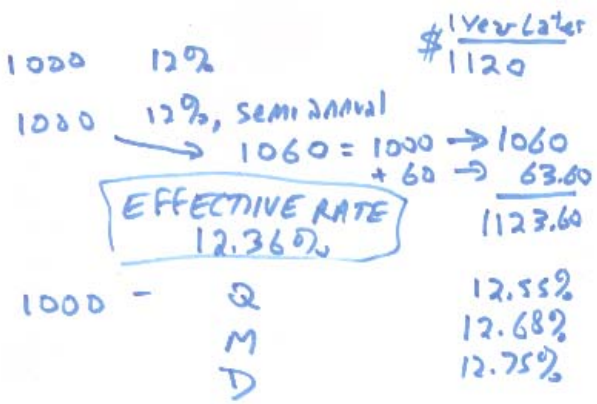
Notes from 1.011, Lecture 7 (February 21, 2003)

Discount Analyses Spreadsheet



Effective v.s. Nominal Rate



The Cool Derivation

$$r\% = [1 + (r/M)]^M - 1$$

$$p = M/r$$

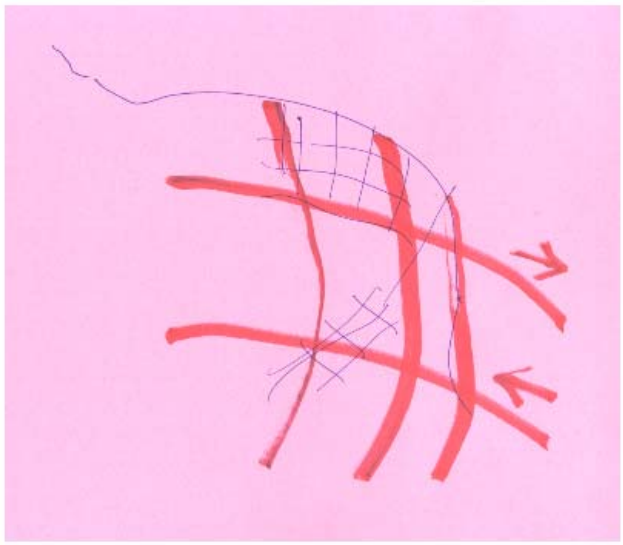
$$[F/P, r\%, 1] = \left(1 + \frac{1}{p}\right)^{rp}$$

$$= \left(\left(1 + 1/p\right)^p\right)^r$$

$$\lim_{p \to \infty} \left(1 + \frac{1}{p}\right)^p = e$$

(See Note on Equivalence)

Proposed Map of Downtown Boston, 1970



Review of where we are + where we are going

Present Economy ⇝ More intricate Formulation QR. Calculus

↓

But - time value of money

↓

EQUIVALENCE ⇝ More Intricate Formulation - Nominal vs. Effective Rates

↓

But, what is the discount rate (+ assumption)

↓

Sensitivity Analysis re i, assumptions re cash flows & cost models ⇝ More Intricate Assessment of which option is more robust or how does risk effect cost

↓

But - what about non-Cash, non financial

PS # 2 - Roads
- Understand the idea of optimization

PS # 3 examples (tending to more intricate)
- Understand the details

Panama Canal
- Very General perspective Don't get lost in details