

Lecture 13

Friday, September 29, 2023 10:53 AM

Prayer

Midterm exam: Chapter 1 and 3

$P = 1000$
 $APR = 6\%$ } This doesn't mean that you'll have \$1060 after the first year.

You need to know also the compound period (monthly, quarterly, ...).

If the compound period is 1 month then you will have

$$P \left(1 + \frac{APR}{12}\right)^{12} = 1000 \left(1 + \frac{6\%}{12}\right)^{12} = 1000 \times 1.005^{12} \approx 1061$$

after the first year.

In general, the accumulated amount after n periods of compounding is

$$P(1+i)^n$$

where $i = \frac{APR}{n}$ = interest rate per period.

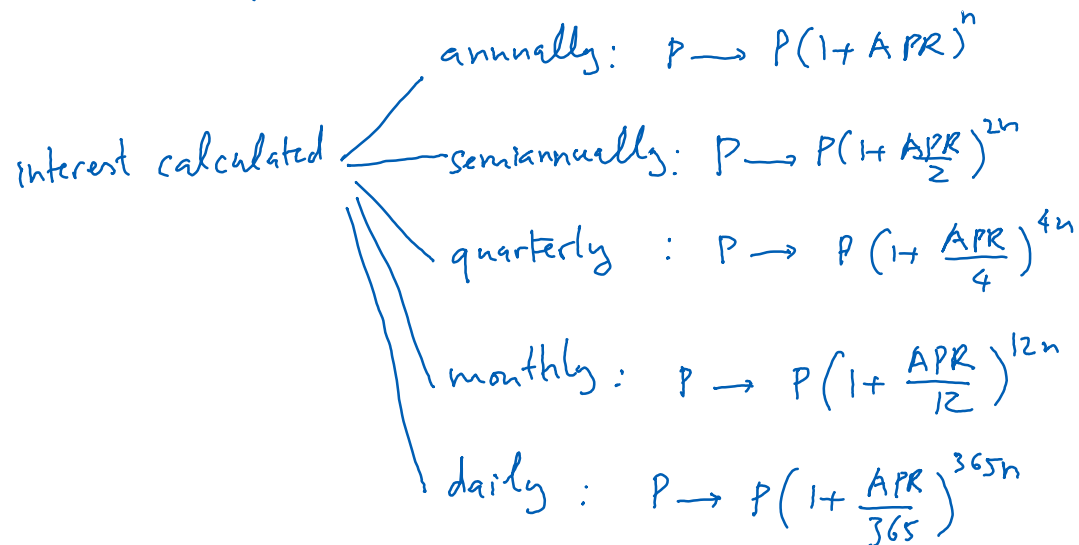
In 1 year, your balance grows from P to $P(1+i)^n$. Thus, the

gain is

$$\frac{P(1+i)^n - P}{P} = \underbrace{(1+i)^n - 1}$$

This is the APY (annual percentage yield)

* Continuous Compounding:



As we keep decreasing the compounding period, the interest is more and more like being calculated at every moment of time.

$$P \left(1 + \frac{APR}{M}\right)^{Mn} \xrightarrow{M \rightarrow \infty} P e^{n \cdot APR}$$

balance in n years of compounding interest

Work on Problems 7, 8 of old worksheet and Problem 1 of new worksheet.