MAT 114 Fall 2002 Finance
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Hours: MWF 11:20 – 12:20 MW 1:40 – 2:40

1. Simple interest $A = (1 + r)P$
P = principal amount, A = future amount, r = interest rate
Example: How much money are we going to get back if we lend \$2000 with 10% simple interest?

2. Compound interest $A = (1 + r)^m P$
P = principal amount, A = future amount
r = interest rate for one compounding period
$r = \frac{r_y}{k}$, r_y = yearly interest rate (APR), k = number of compoundings in a year
m = number of compounding periods
$m = nk$, n = number of years, k = number of compoundings in a year
Example: How much money is going to be in the bank after 5 years if we deposit \$3000 with 2.5% interest rate compounded monthly?

3. Continuous compounding $A = Pe^{r_y n}$
P = principal amount, A = future amount
r_y = yearly interest rate
n = number of years
Example: What much do we have to invest in a bank account that gives 5% interest compounded continuosly, if we want \$3000 in the account after 5 years?

4. Annual yield $APY = \left(1 + \frac{r_y}{k}\right)^k - 1$ (effective rate for a year)
r_y = yearly interest rate, k = number of compoundings in a year
Example: What is the annual yield of a bank account that gives 4% interest compounded daily?

5. Savings $A = d\left(\frac{(1+r)^m - 1}{r}\right)$
d = deposit in each period, m = number of periods
r = effective interest rate for a period
$r = \frac{r_y}{k}$, k = number of payments = number of compoundings
Example: How much money are we going to save in 3 years if we deposit \$100 each month into a savings account that gives 5% interest compounded monthly?

6. Loan payment $(1 + r)^m P = d\left(\frac{(1+r)^m - 1}{r}\right)$
Example: We borrow \$50000 at 8% interest compounded monthly. How much is our monthly payment if we have to repay the money in 4 years?

a. Problem: The Losers Bank offers a bank account that gives 2% interest compounding twice a year. Bank of Suckers offers a bank account with 2.1% interest compounded daily. Which bank account is better?

b. Problem: We deposit \$100 each month into a savings account that gives 4% interest compounded monthly. How long is it going to take to save \$3000?