Double-check everything in this note sheet own your own. I could have made a typo and not noticed.

Interest

- S is the amount of money in an account after some amount of time.
- t is time, typically measured in years (although not always in years).
- P is the principal, the amount of money in the account at the beginning.
- r is the interest rate of the account as a decimal (e.g. $12.5\% = .125$).
- n is the number of times per time unit that you accrue interest
- Formulae:
  - Simple Interest:
$$S = P(1 + rt)$$
  - Interest compounded n times per time unit (e.g. n times per year):
$$S = P\left(1 + \frac{r}{n}\right)^{nt}$$
  - Interest compounded continuously:
$$S = e^{rt}$$

Annuities

- PV is the present value of the annuity.
- FV is the future value of the annuity.
- R is the recurring payment/withdrawal.
- n is the number of payments/withdrawals made.
- m is the number of times per year that you make payments/withdrawals.
- r is the interest rate of the account as a decimal (e.g. $10\% = .1$).
- $i = r/m$.
  - Ordinary Annuity (when you make payments at the end of the payment period).

$$FV = R\left[\frac{(1+i)^n - 1}{i}\right]$$
$$PV = R\left[\frac{1-(1+i)^{-n}}{i}\right]$$

  - Annuity due (when you make payments at the beginning of the payment period).

$$FV = R\left[\frac{(1+i)^n - 1}{i}\right](1+i)$$
$$PV = R\left[\frac{1-(1+i)^{-n}}{i}\right](1+i)$$