8.3 Present Value

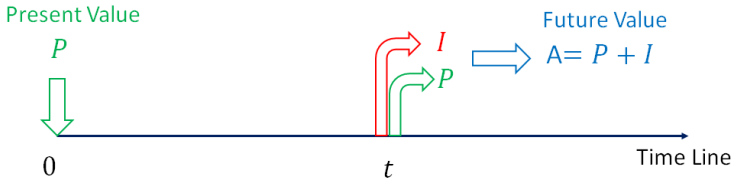
A Present Value

The amount or future value formula

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

may be also written as:

$$P = \frac{A}{(1+i)^n} \quad \text{or} \quad P = A(1+i)^{-n}$$



Some other useful relations are here:

$$i = \frac{r}{m} \qquad A = P + I \qquad n = m \cdot t$$

where:
P is the *principal* or the *present value*
A is the *amount* or the *future value*
I is the total accumulated *interest*
r is the *interest rate* per year
i is the *interest rate* per compounding period
n is the *total number of compounding periods*
m is the *number of compounding periods* per year
t is the *time* (in years)

Example 1. Samuel wants to invest enough money today to have $10,000 for tuition when he goes to college in ten years. If he invests his money at 4% per year, compounded monthly, how much does he need to invest now?

Example 2. Steven borrowed in July 2010 some money at 6% per year, compounded weekly. He paid $5,423.57 in July 2015 to pay off the loan. What sum of money did Steven borrow in 2010?

Example 3. Alex purchased online a laptop in Dec 1st, 2019 by using his credit card and forgot completely about paying any money back. Consequently, in Dec 1st 2020, he had to pay back $2,145.85 to pay off his debt. The credit company charges 21% interest rate per year, compounded daily. What was the price of the laptop?

Reading Pages 436-439
Homework Pages 439-441 # 2d, 7, 9, 11