8.4 – Systematic Savings (Annuities)

Usually we do not have large amounts to deposit into a savings account at one time. However we can deposit small amounts into an account over a period of time.

Systematic Savings Account – Savings account where a fixed amount is deposit at regular intervals. An **annuity** is an example of a systematic savings plan.

$$A = \frac{P\left[\left(1+\frac{r}{n}\right)^{nt} - 1\right]}{\left(\frac{r}{n}\right)}$$

A = Accumulated Amount (or Future Value) after t years
P = Amount of each deposit
r = Annual Interest Rate (in decimal form)
n = Number of periods per year
t = Time (in years)

This formula assumes interest is paid at the end of each interval.

Example p. 478: #8

Example p. 480: #30

Determine the deposit amount (P) needed to have a certain value (A) after t years. This is an example of a **Sinking Fund**. The formula is the previous formula solved for P.

$$P = \frac{A\left(\frac{r}{n}\right)}{\left[\left(1+\frac{r}{n}\right)^{nt} - 1\right]}$$

A = Accumulated Amount (or Future Value) after t years
P = Amount of each deposit
r = Annual Interest Rate (in decimal form)
n = Number of periods per year
t = Time (in years)

Example p. 480: #36