Dec. 13, 2012

Sect. 6-5

Financial Formulas

Compound Interest

1. Regular Intervals

$$S = P\left[1 + \frac{r}{n}\right]^{nt}$$

2. Compounded Continuously

$$S = Pe^{rt}$$

\#1000 @ 7% comp. monthly
for 5 years?

$$S = 1000\left[1 + \frac{.07}{12}\right]^{12(5)}$$

$$= \$1417^{\underline{63}}$$

\# $1000 @ 8\%$ comp. cont. for 10 years

$$S = 1000 \, e^{.08(10)}$$

$$= \$ 2225 \, 54$$

Annuity

Regular Contribution
    Future Value

Distribution
    Present Value

Future Value

Depositing money on a regular basis.

How much will be there when I retire?

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

Put $250 in each month
@ 7% comp. monthly
for 20 years. Find FV.

$$S = 250 \left[\frac{\left(1 + \frac{.07}{12}\right)^{12(20)} - 1}{\frac{.07}{12}} \right]$$

$$S = \$\, 130,231^{\underline{66}}$$

Present Value

Take money out on a regular basis. How much needs to be in the accnt.

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

Want to take $\$750$ each month. Getting 8% comp. monthly. For 20 years. Find PV.

$$A = 750 \left[\frac{1 - \left(1 + \frac{.08}{12}\right)^{-12(20)}}{\frac{.08}{12}} \right]$$

$$A = \$89,665^{\underline{71}}$$

Mortgage

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

$200000 @ 5% interest monthly
make monthly pymts for 30 yrs.

$$R = 200000 \left[\frac{\frac{.05}{12}}{1 - \left(1 + \frac{.05}{12}\right)^{-12(30)}} \right]$$

$$R = \$1073^{\underline{65}}$$