MA115A Dr. Fred Katiraie Formulas for Personal Finance

Simple Interest Earned = Principal x Yearly Interest Rate (as a decimal) x Time in Years

$$A = P(1 + rt)$$

$$\text{Period Interest Rate} = \frac{\text{APR}}{\text{Number of periods in a year}}$$

$$\text{Balance after t periods} = \text{Principal x } (1 + r)^t$$

$$\text{APY} = \left(1 + \frac{APR}{n}\right)^{\text{n}} - 1$$

$$\text{Balance after t periods} = \text{Principal x } (1 + APY)^t$$

$$\text{Present Value} = \frac{\text{Future Value}}{(1+\text{r})^{\text{t}}}$$

$$\text{Monthly Payment} = \frac{\text{Amount Borrowed x r } (1+ \text{r})^{\text{t}}}{\left((1 + \text{r})^{\text{t}} - 1\right)}$$

$$\text{Amount Borrowed} = \frac{\text{Monthly Payment x } \left((1 + \text{r})^{\text{t}} - 1\right)}{\left(\text{r x } (1+ \text{r})^{\text{t}}\right)}$$

$$\text{Balance after t deposits} = \frac{\text{Deposit x } \left((1 + \text{r})^{\text{t}} - 1\right)}{\text{r}}$$

$$\text{Needed deposit} = \frac{\text{Goal x r}}{\left((1 + \text{r})^{\text{t}} - 1\right)}$$

$$\text{Monthly Annuity Yield} = \frac{\text{Nest egg x r } (1+ \text{r})^{\text{t}}}{\left((1 + \text{r})^{\text{t}} - 1\right)}$$

$$\text{Nest Egg Needed} = \frac{\text{Annuity Yield Goal x } \left((1 + \text{r})^{\text{t}} - 1\right)}{\left(\text{r } (1+ \text{r})^{\text{t}}\right)}$$