Math 1313
Chapter 5 – Section 5.3
Amortizations and Sinking Funds
Amortizations

To **Amortize** is to liquidate, for example, a debt by installment payments.

**Amortization Formula:**
The periodic payment $R$ on a loan of $P$ dollars to be amortized over $n$ periods with interest charged at the rate of $i$ per period is

$$R = \frac{Pi}{1 - (1+i)^{-n}}$$

**Sinking Fund**

A **Sinking Fund** is a fund that is set up for a specific purpose at some future date.

**Sinking Fund Formula:**
The periodic payment $R$ required to accumulate a sum of $S$ dollars over $n$ periods with interest charged at the rate of $i$ per period is

$$R = \frac{iS}{(1+i)^n - 1}$$
Example 1: Carrie just graduated from college and got her first real job. Her aunt loaned her $15,000 over the past 4 years for her tuition and books. Carrie now needs to pay her aunt back. Her aunt will charge her 3% per year compounded monthly. How much will Carrie’s monthly payments be if she wishes to owe her aunt nothing in 4 years?

Example 2: Ted plans to retire in 30 years and decides to start saving for his retirement now. He wishes to have $500,000 when he retires. The account he’s decided to invest in pays 8% per year compounded semiannually. How much must he invest semiannually to achieve his goal?
Example 3: A local pizza delivery restaurant anticipates that it will need a new delivery car in 3 years. The car they are interested in buying costs $10,000. How much should the pizza place invest each quarter over the next 3 years in an account that pays 3% per year compounded quarterly, to buy this new car when they anticipate needing it?

Example 4: A bedroom set costs $3,000. You pay 5% down and secure a loan for the remaining balance. How much are your monthly payments if 18% per year compounded monthly is charged over a period of 2 years?