



3\*. (HW19 #3) If you make quarterly deposits of \$378.00 into an ordinary annuity earning an annual interest rate of 4.35%,

(a) how much will be in the account after 6 years?

(b) How much interest did you earn in those 6 years?

4. (HW19 #4) How much do you need to invest semiannually into an ordinary annuity earning an annual interest rate of 6.32% compounded semiannually so that you will have \$6,106.91 after 8 years?

5. (HW19 #5) In 5 years Harry and Sally would like to have \$26,000.00 for a down payment on a house. How much should they deposit each month into an account paying 14% compounded monthly?

6\*. (HW19 #6) Irene plans to retire on December 31st, 2019. She has been preparing to retire by making annual deposits, starting on December 31st, 1979, of \$2450 into an account that pays an effective rate of interest of 9%. She has continued this practice every year through December 31st, 2000. Her goal is to have \$1.45 million saved up at the time of her retirement. How large should her annual deposits be (from December 31st, 2001 until December 31st, 2019) so that she can reach her goal?

**Amortization** is a process by which one pays down a loan or withdraws funds from an account in equal installments.

If a periodic payment  $R$  is made towards a loan (or received from an account) earning an annual interest rate  $r$  for  $t$  years, then the principal of the loan  $P$  (or principal of the account) is

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

where  $n$  is the number of compounding periods per year (also the number of payments per year).

7\*. (HW20 #2) A couple has decided to purchase a \$100000 house using a down payment of \$19000. They can amortize the balance at 10% over 15 years.

(a) What is their monthly payment?

(b) What is the total interest paid?

(c) What is the equity after 5 years?

8. (HW20 #3) Fifteen years ago a couple purchased a house for \$150,000.00 by paying a 20% down payment and financing the remaining balance with a 30-year mortgage at 4.62% compounded monthly.
- (a) Find the monthly payment for this loan.

- (b) Find the balance of the loan after 19 years and after 20 years. Let  $n$  be how many payments are left on the loan.

After 19 years		After 20 years	
$n =$		$n =$	
Loan Balance: \$		Loan Balance: \$	

- (c) Find the total amount of interest paid by the couple during the 20th year.

9. (HW20 #5) Juan purchases an annuity for \$4240 that will make 23 annual payments, the first to come in one year. If the effective rate of interest is 8.8%, how much is each annual payment?