

Math 1324
Section 4.2
Annuities – Present Value and Future Value

The videos corresponding to this worksheet can be found at

<https://online.math.uh.edu/Math1324/>.

UH students can also view the videos within the Math 1324 textbook.

The **future value of an annuity** is the total of all payments made and any interest earned.

Future Value of an Annuity Formula: $F = E \left[\frac{(1+i)^n - 1}{i} \right]$

F = future value

E = equal periodic payment

i and n have the same meaning as before

Present Value of an Annuity Formula: $P = E \left[\frac{1 - (1+i)^{-n}}{i} \right]$

E = equal periodic payment

P = present value

i and n have the same meaning as before

Example 1: Felipe loves jet skiing, but every time he goes jet skiing he has to rent a jet ski. He finally decides to buy a jet ski and finds one he likes. He decides to save up for a down payment on the jet ski. His bank will pay 3% interest compounded quarterly for 2 years. Felipe decides to deposit \$370 into this account each quarter. How much will he have towards a down payment in 2 years?

Example 2: Trang would like to help his grandmother financially. He'd like for her to have \$300 per month for the next 5 years. An account at his credit union will pay 6% per year compounded monthly for 5 years. How much does he need to invest today in this account, so that he can set up this account for his grandmother?

Example 3: Stacy will invest \$3,000 at the end of each semiannual period for 5 years in an account that earns 4.5% interest per year compounded semiannually. How much will she have in this account at the end of 5 years?

Example 4: Newlyweds, Kate and Leo, have just purchased a new home. They made a down payment of \$5,000 and financed the rest through their credit union. Their monthly payments are \$1,200 over 30 years. The interest charged is 5.25% per year compounded monthly. How much was the purchase price of the house?