

MATH 210 FINITE MATHEMATICS

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5.2 Annuities

Definition 1: Annuity

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Definition 2: Future Value of an Annuity

The future value S of an annuity of n payments of R dollars earning interest rate of i per period is

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Example 1

John will need \$12,000 for a down payment in three years. He deposits \$200 per month earning 5% per year compounded monthly. Will he have enough?

Example 2

Suppose John consulted you on what he would have to save per month so he has \$12,000 in three years. At an interest rate of 5% per year compounded monthly, what would he save to deposit per month?

Definition 3: Present Value of an Annuity

The present value of P of an annuity consisting of n payments of R dollars each, earning interest at i per period is

Example 3

Find the present value of an annuity consisting of 24 quarterly payments of \$250 each and earning 3% per year compounded quarterly.

Example 4

Suppose you're 22 years old, just graduated from college, and begin thinking of retirement. There are many options out there. Which option is better?

1. You get a job and deposit \$150 per month into an account earning 5% per year compounded monthly for 7 years. You leave this money alone until the age of 65.
2. It's too hard to save when you're 22. You wait until you're 45 years old and then deposit \$150 per month at 5% per year compounded monthly. How much will you have when you're 65 years old?

Example 5

Brian paid a down payment of \$12,000 towards a new car. He secured a loan for 60 months at an interest rate of 1.99% per year compounded monthly. His monthly payments are \$232 per month. How much was the car worth?