

MATH 210 FINITE MATHEMATICS

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5.1 Compound Interest

Definition 1: Principle

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Definition 2: Simple Interest

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Definition 3: Simple Interest Formulas

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Example 1

A bank pays simple interest at the rate of 8% per year. If a customer deposits \$1000 and makes no withdrawals for 3 years, what is the total amount at the end of 3 years? What is the interest earned?

Example 2

Suppose you buy a TV for \$1500 that is advertised at \$30 a month for 5 years. How much did you pay in interest?

Example 3: Compound Interest

You put \$5000 in an account that pays 4% compound interest per year.

1. At the end of the 1st year:

2. At the end of the 2nd year:

3. At the end of the 3rd year:

Definition 4: Compound Interest Formula

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Example 4

If \$3000 is saved with an interest rate of 2% per year. Find the accumulated amount after 3 years if compounded

1. annually
2. semiannually
3. quarterly
4. monthly
5. weekly

Example 5

What is the balance on a principle amount of \$3500, saved at 3% compounded monthly after (a) 1 month, (b) 1 year, (c) 10 years, (d) 40 years

Example 6

You deposit \$2000. Suppose the stated interest rate (nominal) is 4% compounded monthly. If you were to receive interest ONCE, what would the interest rate have to be so that you earn the same amount?

Definition 5

Example 7

Find the effective rate of interest corresponding to a nominal rate of 4% per year compounded (a) annually, (b) semiannually, (c) quarterly, (d) daily

1. Annually

2. Semiannually

3. Quarterly

4. Daily

Definition 6: Present Value

Example 8

Suppose that you want to take a trip to Europe in 6 years and figure you need \$7500. To have that much set aside in 6 years, how much do you have to deposit today into a bank earning 5% compounded quarterly?