If an amount of P dollars grows at an annual rate of r (usually given as a percent), then after t years, the total amount, A, will be

$A = P(1+r)^t$, where r has been converted to a decimal

Examples:

[a] Amir deposits \$500 into a savings account which earns 3.1% interest annually. What is the value of his account 4 years later ?

$A =$ $P =$ $r =$ $t =$

[b] Blanca deposits \$700 into a certificate of deposit (CD) which earns 2.9% interest annually. How many years later will the value of the CD be \$1000 ?

$A =$ $P =$ $r =$ $t =$

[c] Carla buys a bond which earns 3.4% interest annually. She wants the bond to have a value of \$900 five years later. What is the value of the bond now ?

$A =$ $P =$ $r =$ $t =$

[d] Dinh deposits \$5000 into a speculative investment, and 6 years later, the investment is worth \$8000. What is the annual growth rate of the investment ?

$A =$ $P =$ $r =$ $t =$

HOMEWORK (DUE IN CLASS ON FRI NOV 19)

[1] Show your work clearly and neatly.

[2] Summarize each answer in a sentence.

[3] All final answers which represent money should be rounded to the nearest cent.

[4] All final answers which represent time should be rounded to 2 decimal places.

[5] All final answers which represent rate should be percentages rounded to 4 decimal places.

[1] You buy a bond that will be worth $40,000 twenty years from now. If the bond grows by 2.7% each year, what is its value now ?

[2] You put $5,800 into an investment that grows by 7.3% annually. How long will it take the investment to reach a value of $8,900 ?

[3] You invest $7,400 in a venture that grows by 5.1% annually. How much is your investment worth after 6 years ?

[4] You invest $11,300 in a stock that is worth $17,000 three years later. What was the stock's annual growth rate ?

[5] Your gold jewelry doubled in value in 3 years. How much did its value increase each year ?

[6] Jamie and Terry just bought their first house together. They expect to do a $24,000 remodel 7 years from now. If they deposit $15,000 into an investment now, what annual growth rate must the investment achieve to cover the cost of the remodel 7 years from now ?

[7] When Lee and Taylor got married in August 2008, Lee's mother gave them a $5,700 painting as a wedding present. If the value of the painting increases 8.3% per year, how much will it be worth when they celebrate their anniversary in August 2024 ?

[8] Morgan and Reese plan to start a business 6 years from now. They expect the start-up costs to be $32,000. How much should they invest now, if their investment is guaranteed to grow 7.6% annually, in order to cover the start-up costs 6 years from now ?

[9] When she graduated from high school, Bailey charged $9,000 to her credit card to cover a lavish party, then didn't bother to look at or pay her bill. The interest, fees and fines caused her credit card balance to grow by 29% each year. When she finally looked at it, the balance was $23,000. How long after she charged her credit card did she finally look at her bill ?

[10] When Dana and Chris got engaged at the age of 25, Dana gave Chris an antique watch, which grew in value by 5.4% each year. By the time their son entered college, the watch had tripled in value. How old were they when their son entered college ?

In addition, do the related problems on the Midterm 3 review materials to make sure you are prepared for this type of problem on the midterm.