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 MON MAR 8)

[1] Solve the following problems on a separate sheet of paper.

[2] Show your work clearly and neatly.

[3] Summarize each answer in a sentence.

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

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

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

[a] Lee and Taylor 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 ?

[b] When Morgan and Reese got married in August 2008, Morgan'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 Morgan and Reese celebrate their anniversary in August 2024 ?

[c] Chris and Dana 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 ?

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

[e] When Jamie and Terry got engaged at the age of 23, Jamie gave Terry a ring, which grew in value by 5.4% each year. By the time their daughter entered college, the ring had tripled in value. How old were Jamie and Terry when their daughter 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.