

Alg2 Classwork/Homework, due Friday, February 9

On a separate sheet of paper, answer each question, showing as much of your work as possible.

The following will be useful in answering your questions.

Compound Interest Formula (Explicit Form)

If a principal P is invested for n periods at a fixed **compound interest** rate r per period, then

$$A_n = P \cdot (1 + r)^n,$$

where A_n is the amount in the account after n periods.

Suppose you bought a 10-year T-note in the amount of \$500 on 15 August 2009 at an annual interest rate of 4.5% per year.

First, using compound interest, where n is once-per-month
(and the interest rate is $\frac{4.5\%}{12} = 0.375\%$.)

- What amount of interest did you earn in the first year?
- What amount of interest will you earn in the last year?
- How much interest will you have earned when the note matures on 15 August 2019?
- Make a list of the total value (amount plus interest) for each of the ten years. What kind of sequence is it? How do you know? (You might want to make a graph.)
- What will the value of the T-note be at maturity?

Second, using compound interest, where n is once-per-week

- What amount of interest did you earn in the first year?
- What amount of interest will you earn in the last year?
- How much interest will you have earned when the note matures on 15 August 2019?
- Make a list of the total value (amount plus interest) for each of the ten years. What kind of sequence is it? How do you know? (You might want to make a graph.)
- What will the value of the T-note be at maturity?

Third, using compound interest, where n is once-per-day

- What amount of interest did you earn in the first year?
- What amount of interest will you earn in the last year?
- How much interest will you have earned when the note matures on 15 August 2019?
- Make a list of the total value (amount plus interest) for each of the ten years. What kind of sequence is it? How do you know? (You might want to make a graph.)
- What will the value of the T-note be at maturity?