

Compounding Continuously (Assignment 29)

1. If you invest \$2500 in an account, what is the balance in the account after 4 years if you earn:

a) 1.6% interest compounded annually?

b) 1.6% compounded monthly?

c) 1.6% compounded daily?

d) 1.6% compounded continuously?

2. A long-term bond returns you \$21,171.63 at the end of ten years. Assuming an interest rate of 4.5% compounded daily, what was the amount of your initial investment?

3. You are investing \$1500 at 5.2% compounded continuously. How much money will you have in 12 years?

4. Your bank is offering a savings account with an interest rate of 1.5%, compounded continuously. If you deposit \$1,000 today, what will your balance be in 2025?

5. What interest rate do you need for a \$5000 investment to double in 5 years if the interest is compounded annually?

6. How much money do you need to put into a savings account with 2.75% interest compounded continuously in order to have \$12,000 after 7 years?

7. In 1910, the population of Larkspur was 20,000. If the population is increasing at an annual rate of 4.6%, what is the population today?

8. How much money would you need to deposit today at 5% annual interest compounded monthly to have \$20,000 in the account after 9 years?

For questions 9 and 10, imagine you are planning to invest \$1,000 in an account and leave it for the next ten years. Compare accounts A and B and circle the one that will give you the largest profit.

9. **Account A:** 4.1% compounded quarterly

Account B: 4% compounded monthly

10. **Account A:** 7% compounded continuously

Account B: 7.1% compounded annually

11. At the beginning of 2003 there was an outbreak of the SARS virus when nine infected individuals were first identified. Throughout the year, the number of SARS cases steadily increased at a rate of 62% each month. How many cases were there by the end of the year?