Homework 6

Reading Assignment

Math in Society by David Lippman

`http://tinyurl.com/y54ndew6`

1. Math in Society pages 247-261 (pdf pages 251-265)

2. Math in Society pages 173-178 (pdf pages 177-182)

1 CPI Problems

1. If a car cost $700.00 in 1965, how much would that same car cost in 2018?

2. From 1970 to 2018, the United States has experienced three major recessions. Using the CPI chart, compute the rate of inflation over these 48 years. When did these recessions begin and end? Support your reasoning using the CPI data. (You may want to use a spreadsheet to speed up this process.)

3. Find a few (around three to five) articles pertaining to the recessions in the previous question. When did economists say these recessions happened? Does this agree with your assessment from the CPI data?

2 Linear Growth Problems

The following problems are from "Math in Society" page 193 (pdf page 197)

4. Marko currently has 20 tulips in his yard. Each year he plants 5 more.

   a.) Write a recursive formula for the number of tulips Marko has

   b.) Write an explicit formula for the number of tulips Marko has

5. Pam is a Disc Jockey. Every week she buys 3 new albums to keep her collection current. She currently owns 450 albums.

    a.) Write a recursive formula for the number of albums Pam has

    b.) Write an explicit formula for the number of albums Pam has

6. A store's sales (in thousands of dollars) grow according to the recursive rule $P_n = P_{n-1} + 15$, with initial population $P_0 = 40$.

    a.) Calculate P_1 and P_2.

    b.) Find an explicit formula for P_n.

    c.) Use your formula to predict the stores sales in 10 years

    d.) When will the stores sales exceed $100,000?

7. The number of houses in a town has been growing according to the recursive rule $P_n = P_{n-1} + 30$, with initial population $P_0 = 200$.

    a.) Calculate P_1 and P_2.

    b.) Find an explicit formula for P_n

    c.) Use your formula to predict the number of houses in 10 years.

    d.) When will the number of houses reach 400 houses?

8. A population of beetles is growing according to a linear growth model. The initial population (week 0) was $P_0 = 3$, and the population after 8 weeks is $P_8 = 67$.

    a.) Find an explicit formula for the beetle population in week n

    b.) After how many weeks will the beetle population reach 187?

9. The number of streetlights in a town is growing linearly. Four months ago $(n = 0)$ there were 130 lights. Now $(n = 4)$ there are 146 lights. If this trend continues,

    a.) Find an explicit formula for the number of lights in month n

    b.) How many months will it take to reach 200 lights?