

**Review for Exam #2**

1. Linus has a savings account that compounds monthly at an APR of 5.32%.
  - (a) Find the APY of Linus' account.
  - (b) If Linus deposits \$350 per month for 18 years, how much will he have after the 18 years? How much of that will have been earned in interest?
  - (c) If Linus wants to have \$125,000 10 years from now, how much should he deposit each month for the 10 years?
  
2. Pauline's bank offers her a loan that compounds monthly at an APR of 7.87%.
  - (a) If Pauline takes out a 9-year loan for \$48,000, how much will her monthly payment be? How much will she pay over the course of the 9 years?
  - (b) If Pauline can afford to pay \$800 per month for 9 years towards a loan, how much can she afford to borrow?
  
3. The number of ants on Harold's ant farm is doubling every 7 months.
  - (a) Find the time it takes for the number of ants to triple.
  - (b) If there were 1,250 ants two months ago, how many ants are on Harold's farm now?
  - (c) If there were 1,250 ants two months ago, how many months ago were there 200 ants?
  
4. The frequency of ghost sightings is decreasing at a rate of 8.2% per year.
  - (a) Find the number of years it takes for the frequency of ghost sightings to be cut in half.
  - (b) If there are 88 ghost sightings per month this year, how many ghost sightings per month will there be in 11 years? How many ghost sightings per month were there 5 years ago?
  - (c) If there are 88 ghost sightings per month this year, when will there only be 2 ghost sightings per month? When were there 500 ghost sightings per month?
  
5. The number of fruit flies at Eleanor's compost is increasing at a rate of 2.1% per day.
  - (a) How often does the number of fruit flies double? How often does the number triple?
  - (b) If there are 465 fruit flies today, how many fruit flies were there 4 weeks ago? How many fruit flies will there be 1 year from now?
  - (c) If there are 465 fruit flies today, when will the number of fruit flies reach 2,000?

6. Argon-41 has a half-life of 1.827 hours.
- How long does it take for a quantity of Argon to decrease to 10% of its original amount?
  - Suppose that 1 hour ago Jasper had 50mg of Argon-41. How much Argon-41 is left right now? When will Jasper only have 10mg of Argon-41?
  - If Jasmine has 100mg of Argon-41 right now, how long ago did she have 150mg of Argon-41. How much will she have 1 day from now?
7. Suppose that the number of wormless apples on Exeter's apple tree is decreasing at a linear rate. Further suppose that he had 85 wormless apples 4 days after he began harvesting and 60 wormless apples 8 days after he began harvesting.
- Find a linear equation that describes the number of wormless apples in Exeter's tree as a function of the number of days since he began harvesting.
  - How many wormless apples did he have the day he began harvesting? How many wormless apples did he have 15 days after he began harvesting?
  - How many days after he began harvesting apples were there 30 wormless apples?
8. The price of robot vacuums is increasing by \$4.10 per month and on average they already cost \$280!
- Find a linear equation that describes the price of robot vacuums as a function of the number of months from right now.
  - How much will robot vacuums cost one year from now?
  - When will robot vacuums cost \$1,000?
9. A model version of a T-Rex is  $2\frac{1}{2}$  feet tall with a surface area of 3 square feet and a volume of 1 cubic foot. If the actual T-Rex (which is the proportionally identical to the model) is 18 feet tall, what is its volume and surface area?
10. Compute the following:
- The volume of a cylindrical tank that is 100 feet tall and 150 feet in diameter.
  - The volume of a sphere of radius 8 yards.
  - The perimeter and area of the figure below:

