

Homework 13

(due April 12)

Math 130 *Kovitz* 2018

1. The number of bacteria in a culture is increasing according to the law of exponential growth. The initial population is 100 bacteria, and the population after 8 hours is double the population after 1 hour. How many bacteria will there be after 5 hours? after 7 hours and 20 minutes?
2. A population of fruit flies is increasing according to the law of exponential growth. At time 1 hour there is 1 pound of flies and at time 4 hours there are 4 pounds of flies.
 - (a) Find the exact value of the doubling time. (No calculator is necessary.)
 - (b) True or false: at time 2 hours there were exactly 2 pounds of fruit flies.
 - (c) If false, about how many pounds of fruit flies were there at time 2 hours (to the nearest four-decimal accuracy or as an exact radical expression).
 - (d) True or false: at time $2\frac{1}{2}$ hours there were exactly 2 pounds of fruit flies.
 - (e) Find the one-hour growth factor. That is the ratio of the number of fruit flies at any given time to the number of fruit flies one hour earlier. For this experiment, it's a constant. State its approximate decimal or exact radical value.