

**Homework #8**

Instructions: Do the following problems on a **separate** sheet of paper.

1. Solve for  $x$  in the following equations.

(a)  $\log_x 81 = 4$

(b)  $\log_7 x = \frac{1}{2}$

(c)  $\log_{125} 5 = x$

(d)  $1.15^x = 80$

(e)  $400 = 650(.5)^{x/10}$

2. Suppose that Pollyanna has a viral infection that is being treated by an herbal remedy, and that the number of viruses is decreasing by 8.2% per day.

(a) What percentage of the original viruses are left after 2 weeks?

(b) After how many days will the number of viruses be at 16% of the original amount?

(c) How often is the number of viruses cut in half?

3. Suppose that Rulon has had a viral infection for the last 2 months that just won't go away no matter what he tries, and the the number of viruses is increasing by 13.55% per week. Further suppose that Rulon's infection consisted of a modest 22 viruses 2 weeks ago.

(a) How many viruses does he have right now?

(b) How many viruses will he have tomorrow?

(c) How many viruses did he have 7 weeks ago?

(d) How often does the number of viruses double?